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THE *MELIGETHES* OF ABYSSINIA (COLEOPTERA: NITIDULIDAE).

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With 75 Text-figures

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I. Introduction

This paper is based primarily upon the large collections of *Meligethes* made by Dr. Hugh Scott and by Mr. J. Omer-Cooper in Abyssinia from early September to late December 1926, and by Dr. Scott during the last four months of 1948, and again during the course of his Simien journey in November and December 1952. In the locality data given below under each species, all specimens in the British Museum are to be understood as having been collected by Dr. Scott unless otherwise stated.

Also considered are a few examples from other sources, and in particular a small but varied collection in the Hungarian National Museum, Budapest. These latter for the most part were taken by Kovács, the few dated specimens in 1911 or January 1912.

In the course of his investigations, the author has been privileged also to examine, with one exception, the type, or a cotype, of all species previously described from this area. The whereabouts of the unique type of *similis* Grouvelle is unknown, but the full detail of its original description happily appears to allow of considerable accuracy in assigning it to its proper position.

Apart from the papers by Reitter (1872) dealing with the South African species, and by Grouvelle (1906) on those of Madagascar, no faunistic study of the extra-Holarctic species of African *Meligethes* has hitherto appeared. An exception, not at first apparent, is that dealing with the *Meligethes* of South West Arabia (Easton, 1954), for these (*i.e.* species from S. W. Arabia proper) have no close affinity to the Holarctic species, and are to be regarded as an integral part of the fauna of Africa south of the Sahara.

As already indicated, the *Meligethes* of Africa south of the Sahara exhibit considerable differences from those of the Holarctic region. Though it is possible

to recognise in certain species-groups of the former area characters relating them to species-groups from the latter, it is not yet feasible to devise a single combined key to the species-groups of the two zones. That which follows claims therefore to be no more than a preliminary contribution to a taxonomic arrangement of the African species. These species are extremely numerous, with often highly obscure distinguishing characters, and even these show an appreciable degree of variation. Their differentiation and study can therefore never be rendered easy. The present key, including as it does only the species of a restricted area, takes no cognisance of important species-groups not therein represented. These must be included in later faunistic works, when no doubt much modification of the major grouping will be found necessary.

In describing the ovipositor of the various species a new character has been recognised as apparently of considerable importance in taxonomy. If we observe the outer and inner subdivisions of the coxites, it will be seen in most instances (figs. 57 to 68 and 75) that, apart from the slight movement possible at the membranous suture between them, their exposed edges form a more or less continuous line. In other species (figs. 69 to 74) the inner subdivisions as soon as they reach beyond the outer are expanded, their exposed edges being more or less distinctly rounded, and giving an appearance highly reminiscent of the mammalian penile corona. I have therefore termed this feature the corona. Beyond it the ovipositor is usually sinuately contracted, and the whole apical portion is generally well sclerotised. From its appearance the corona would seem to function in preventing premature withdrawal of the organ from the tissues of the host-plant. I have not observed it in any of the Holarctic species.

No species of *Meligethes* is truly glabrous. Where this term is employed, therefore, it is intended to indicate that the pubescence is so short as not to reach beyond the edge of the individual puncture from which it arises.

II. Key to the Abyssinian Species of the Genus *Meligethes*

1 Outer edge of front tibiae (fig. 1) crenulate, or with a few very small, sharp teeth close to the apex, even in size and spacing; front tibiae only feebly dilated, broadest immediately before the apex; curved lines on last sternite short and inconspicuous, largely hidden beneath the preceding segment; head longer than wide, excluding eyes; dark green, bluish or brassy. *Male:* metasternum with a somewhat deep median longitudinal furrow; aedeagus (figs. 22 and 23) short, tegmen with large V-shaped apical excision and broad rounded lateral lobes. *Female:* ovipositor (fig. 57) somewhat long and pointed, with apex piceous . . . . . **longiceps*** (p. 373)

– Outer edge of front tibiae with distinct well-formed teeth, especially close to the apex, or they are uneven in size or spacing, or are blunt; front tibiae usually more strongly dilated, generally broadest further from apex; curved lines on last sternite longer and normally conspicuous; head transverse 2

2 Outer edge of front tibiae (figs. 2 to 4) finely crenulate at least to the basal third, then with a group of long, sharp, downwardly directed teeth gradually increasing in size to the penultimate; oval, somewhat strongly convex. Greenish to bluish black, or chestnut brown 3

* Described below as new.

– Outer edge of front tibiae with teeth not of this pattern ; black, or very nearly so 6

3 Green to bluish black ; elytral punctures not transrugose ; outer edge of front tibiae (fig. 2) with about five well-formed teeth ; length 2·1–2·4 mm. ; pubescence inconspicuous, not longer than the punctures ; surface of pronotum between the punctures cross-reticulate, without small closed cells ; elytra strongly reticulate in a radial manner around the punctures. *Male :* metasternum, at its posterior third, with an elongate, granular tubercle on either side of the midline, separated by a smooth furrow half as wide as the antennal club ; last sternite, at its apex, with an oval transverse, smooth, shining area, concave from side to side and of equal width to the hind tibia ; aedeagus (figs. 24 and 25) short and broad ; tegmen with very short rounded lateral lobes, its apical excision wide with its straight base on a more ventral plane ; median lobe with apical portion explanate. *Female :* ovipositor (fig. 58) elongate, somewhat sharply pointed, its long styli at a distance from the apex scarcely in excess of their length
(in the *gloriosus* species-group) **simulans*** (p. 375)

– Dark chestnut brown ; elytral punctures transrugose ; outer edge of front tibiae (figs. 3 and 4) with three well-formed teeth ; length 1·4–2·0 mm. 4

4 With normally evident pubescence ; upper surface between the punctures smooth or almost so ; length 1·4–1·5 mm. 5

– Glabrous ; upper surface between the punctures generally distinctly reticulate ; length 1·8–2·0 mm. ; pronotum finely and diffusely punctured. *Male :* metasternum with two fine raised longitudinal, almost parallel, ridges in the mid-third, the surface between them smooth, shining, and slightly concave from side to side ; apex of last sternite with a suspicion of a low tubercle ; aedeagus (figs. 26 and 27) short and broad ; tegmen with short rounded lateral lobes separated by the wide concave apical excision ; median lobe broadened to the apical third, thence sinuately contracted to its blunt apex, but on a more ventral plane a flat lobule projects on either side. *Female :* ovipositor (fig. 59) small, narrow, elongate, with apical region piceous, styli very close to the blunt apex, very long and narrow, longer than the width of the adjacent coxites
spissus Grouvelle (p. 377)

5 Front margin of clypeus sinuate in the middle with side angles rounded ; pronotum one and a half times as wide as long, coarsely and somewhat closely punctured ; caudal marginal line of hind coxal cavity turning back shortly before its outer end. *Male :* not known. *Female :* ovipositor (fig. 60) sharply pointed with apex slightly piceous, its long narrow styli at a distance from the apex slightly less than their length, transverse suture widely V-shaped.
culminis* (p. 378)

– Front margin of clypeus emarginate in an arc ; pronotum twice as wide as long, sparsely punctured ; caudal marginal line of hind coxal cavity turning back appreciably before reaching its outer end. Unknown to author . . . . . **similis** Grouvelle (p. 379)

6 Broader, oval ; antennal club subtruncate, as broad as long ; elytral punctures nearly three times as large as the eye facets, separated by less than one diameter ; with less conspicuous pubescence ; tibiae

(fig. 5) much broadened with outer edge strongly rounded; antennae, front legs, and all tibiae pitchy red; length 2·5–3·2 mm. *Male:* front tarsi feebly dilated; last ventral segment with a shining transverse curved ridge at its apex; aedeagus as figured (figs. 28 and 29); tegmen with large U-shaped apical excision between long lateral lobes; median lobe bluntly pointed. *Female:* ovipositor (fig. 61) long and somewhat sharply pointed, its apex deeply piceous

aethiopicus Grouvelle (*meruensis* Easton, **syn. nov.**) (p. 379)

– Narrower, subparallel or nearly so; antennal club oval, elongate; upper surface usually less coarsely punctured, generally with conspicuous pubescence; tibiae less broadened 7

7 Elytral punctures, especially close to the base, showing more or less distinct transverse rugosity; upper surface between the punctures smooth 8

– Elytral punctures without a trace of transrugosity 9

8 Narrower, with long silvery pubescence; front tibiae (fig. 6) narrow, parallel-sided, teeth on outer edge very variable, often more or less pectinate; length 1·7–2·2 mm. *Male:* last sternite with a minute apical notch; aedeagus (figs. 30 and 31) elongate; tegmen with broad blunt lateral lobes bounding the deep narrow apical excision; median lobe subtruncate. *Female:* ovipositor (fig. 62) with apex piceous, with long narrow, almost terminal styli

abstractus Grouvelle (*quadridentatus* Grouvelle, **syn. nov.**) (p. 380)

– Broader, with normal greyish pubescence; front tibiae (fig. 7) broader, outer edge with small, sharp downwardly directed teeth from the middle gradually increasing in size to the penultimate; length 2·2 mm. *Male:* not known. *Female:* ovipositor (fig. 63) unicolorous, large, long, sharp, with very short styli close to the apex

limifer* (p. 382)

9 Outer edge of front tibiae (figs. 8 to 10) without any trace of a more prominent tooth near the basal third, crenulate at least as far as the middle, with a subapical group of larger teeth, of which the intermediate are more prominent than those before and after, their apices are obtusely pointed, rounded, or truncate and give the edge of the tibia an almost evenly rounded contour; front tarsi strongly dilated in both sexes; ovipositor without a corona; length 1·5–2·1 mm. 10

– Outer edge of front tibiae with a more prominent tooth, often extremely small, near the basal third, or with other distinct teeth above the middle, or size distinctly larger, or ovipositor with a corona . . 12

10 Length 1·5–1·6 mm.; male with well-marked secondary sexual characters at apex of last ventral segment

11 (the *forcipatus*[1] species-group)

— Length 1·8–2·1 mm.; upper surface between the punctures shallowly reticulate; apex of last ventral segment without secondary sexual characters. *Male:* metasternum flattened; last sternite simple. Tegmen of aedeagus (fig. 32) with short rounded lateral lobes and small U-shaped apical excision; median lobe (fig. 33) bluntly pointed. *Female:* ovipositor (fig. 64) with short styli at a distance from the somewhat sharp apex equal to their length; with a very short ventral spicule . . . . . **adversus*** (p. 383)

[1] *M. forcipatus*, from Natal, awaits description.

11 All tibiae and front tarsi (fig. 9) slightly narrower ; surface of elytra between the punctures reticulate. *Male :* metasternum with a low rounded eminence on either side of a median longitudinal sulcus ; last sternite (fig. 56) with a wide abrupt excision at its apex ; tegmen of aedeagus (fig. 34) much narrowed from the shoulders, with a short U-shaped apical excision and short rounded lateral lobes ; median lobe (fig. 35) parallel-sided with rounded apex. *Female :* ovipositor (fig. 65) somewhat abruptly contracted towards the apex

lividus* (p. 384)

— All tibiae and front tarsi (fig. 10) slightly broader ; surface of elytra between the punctures smooth. *Male :* unknown. *Female :* ovipositor (fig. 66) more gradually contracted to apex

livens Grouvelle (p. 386)

12 Front tibiae (figs. 11 and 12) subparallel, their outer edge with a more prominent tooth near the basal third, separated by a series of crenulations, or of small subequal teeth, from a subapical group of larger teeth, of which the first and penultimate are more prominent than those between ; ovipositor without a corona ; length 1·6–2·3 mm. 13

— Front tibiae without the above characters combined, if outer edge with a more prominent tooth near the basal third, this is smaller, or the succeeding teeth are less small and regular, or the subapical group is differently arranged ; if length less than 2·4 mm., ovipositor with a more or less definite corona 14

13 Elongate, subparallel, deep black ; somewhat shining ; pronotum more strongly transverse, widest at the basal third, sides not explanate ; upper surface less closely punctate ; elytra distinctly reticulate. *Male :* metasternum feebly triangularly depressed ; last sternite with a very small apical emargination and in front of this a shallow transverse impression ; aedeagus (figs. 36 and 37) short and broad, tegmen with short rounded lateral lobes and shallow apical excision. *Female :* ovipositor (fig. 67) somewhat long and pointed

micropunctatus* (p. 386)

— Elongate oval, leaden black, somewhat dull ; pronotum less strongly transverse, widest at the base, sides narrowly explanate ; upper surface more closely punctate ; elytra not or scarcely reticulate. *Male :* unknown. *Female :* ovipositor (fig. 68) with apex slightly piceous, less sharply pointed. Eritrea . . . . **maureenae*** (p. 389)

14 Ovipositor with a more or less marked corona ; length almost always less than 2·5 mm. 15

— Ovipositor without a corona ; length 2·4–2·6 mm. *Male :* with a shining curved ridge, concave posteriorly, at the apex of the last sternite ; front tarsi moderately dilated 20

15 Front tarsi (fig. 13) in both sexes exceptionally strongly dilated, as wide as front margin of clypeus (as in ♂ *obscurus* Erichson). *Male :* last sternite with a minute apical notch, the edges of which are rolled and shining ; tegmen of aedeagus (fig. 38) with short rounded lateral lobes, apical excision shallow and rounded ; median lobe (fig. 39) bluntly pointed. *Female :* ovipositor (fig. 69) with apical portion beyond the corona broader than long, the outer subdivisions of the coxites large, and with the paraprocts markedly broadened

latimanus* (p. 390)

— Front tarsi not, or less, dilated, narrower than front margin of clypeus 16

16 Front tibiae reddish-brown ; their outer edge (fig. 14) generally with a minutely more prominent tooth near the basal third, the apices of

the teeth of the subapical group usually forming an evenly rounded contour; front tarsi somewhat strongly dilated in both sexes; length 1·8–2·4 mm.; upper surface between the punctures distinctly microscopically reticulate; elongate, subparallel. *Male:* underside simple; tegmen of aedeagus (fig. 40) narrowed from the middle, with narrow U-shaped apical excision and long narrow lateral lobes; median lobe (fig. 41) with apex bluntly pointed. *Female:* ovipositor (fig. 70) with apex somewhat sharp, slightly piceous, the short styli at a distance from it equal to their length, not projecting beyond it; transverse suture straight . . . **mauritii** Grouvelle (p. 391)

— Front tibiae black, or at least concolorous with the others; front tarsi less dilated, even in the male. *Male:* a small shining tubercle at apex of last ventral segment of abdomen 17

17 Length 1·8–2·6 mm.; elongate, subparallel; pronotal punctures slightly or distinctly larger than the eye facets. *Female:* ovipositor with transverse suture widely V-shaped 18

— Length 1·6–2·0 mm.; slightly rounded at sides; pronotal punctures equal in size to the eye facets 19

18 Pronotum more transverse, as wide at base as elytra; outer edge of front tibiae (fig. 15) with well-developed teeth from the basal fourth, none being exceptionally prominent. *Male:* tegmen of aedeagus (fig. 42) with lateral lobes somewhat long, and apical excision deep; median lobe (fig. 43) bluntly pointed. *Female:* ovipositor (fig. 71) with corona less well-developed, apex blunt, the short styli extending beyond it . . . . . **altercatio*** (p. 393)

— Pronotum less transverse, slightly narrower at base than elytra; outer edge of front tibiae (fig. 16) with a distinctly more prominent tooth near the basal third. *Male:* aedeagus (figs. 44 and 45) elongate; tegmen with short lateral lobes and shallower apical excision; median lobe with a small papilliform process at apex. *Female:* ovipositor (fig. 72) with corona well-marked; apex somewhat sharp, the slightly longer styli not extending beyond it

coronatus* (p. 394)

19 Outer edge of front tibiae (fig. 17) usually with a well-developed prominent tooth near the basal third, those of the subapical group sharp, irregular, and not forming an evenly rounded contour; front tarsi narrower. *Male:* metasternum with a shallow longitudinal impression widening posteriorly; tegmen (fig. 46) with shallow U-shaped apical excision between the short rounded lateral lobes; median lobe (fig. 47) with apex narrowly truncate. *Female:* ovipositor (fig. 73) bluntly pointed, corona narrow; transverse suture straight . . . . . **scotti** Easton (p. 396)

— Outer edge of front tibiae (fig. 18) without or with a minutely more prominent tooth near the basal third, those of the subapical group blunt, their apices giving the edge of the tibia an evenly rounded contour; front tarsi wider. *Male:* metasternum with a shallow triangular impression posteriorly; tegmen (fig. 48) with lateral lobes longer and apical excision deeper; median lobe (fig. 49) with apex more widely truncate. *Female:* ovipositor (fig. 74) more obtusely pointed, corona well-marked; outer subdivisions of coxites much reduced; transverse suture widely V-shaped

subcaerulescens Grouvelle (=*subpectinatus* Grouvelle, **syn. nov.**) (p. 396)

20 Upper surface between the punctures smooth, non-reticulate ; outer edge of front tibiae (fig. 19) with irregular small sharp teeth from the basal third ; with long conspicuous golden pubescence. *Male :* metasternum simple ; aedeagus (figs. 50 and 51) elongate ; tegmen with a narrow cleft-like apical excision between the wide rounded lateral lobes ; median lobe with apex rounded. *Female :* unknown **fossilis*** (p. 398)

— Upper surface between the punctures distinctly microscopically reticulate ; outer edge of front tibiae (figs. 20 and 21) with irregular sharp teeth, but generally with one more prominent near the basal third 21

21 Slightly narrower and more convex ; elytra with deep punctures, separated by one to one and a half diameters. *Male :* metasternum with a shallow linear longitudinal impression ; tegmen of aedeagus (fig. 52) with lateral lobes somewhat long, curving inwards, and terminating in a bunch of long hairs, apical excision broader ; median lobe (fig. 53) bluntly pointed. *Female :* ovipositor (fig. 75) somewhat pointed, outer subdivisions of coxites long and narrow, transverse suture feebly inversely V-shaped **subexilis** Grouvelle (= *insolens* Grouvelle, **syn. nov.**) (p. 399)

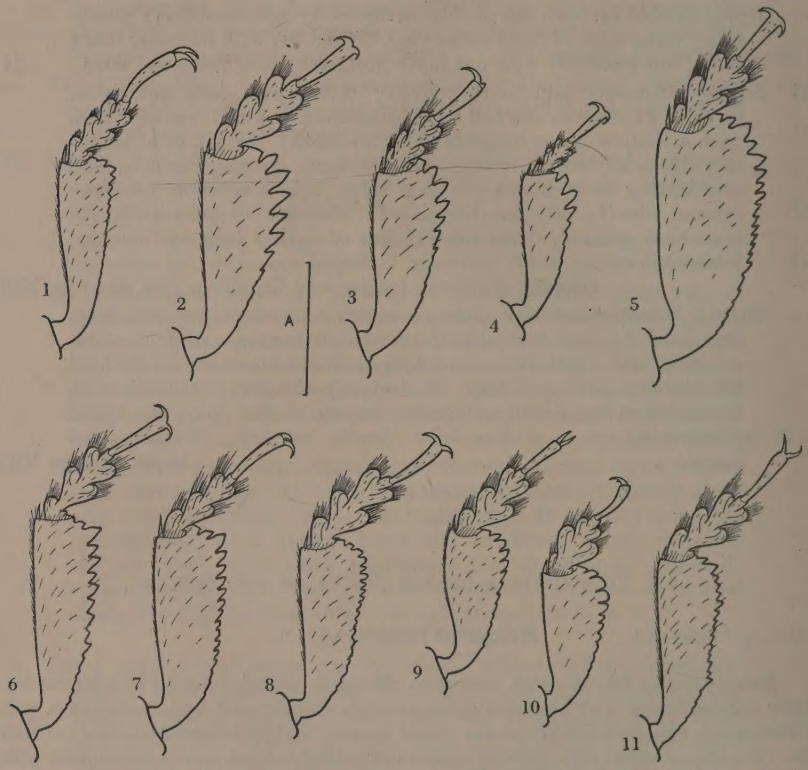
— Slightly broader and less convex ; elytra with shallower punctures separated by one and a half to two diameters. *Male :* metasternum with a narrow median longitudinal impression in the hind two-thirds ; aedeagus (figs. 54 and 55) elongate ; tegmen with lateral lobes broad and obliquely truncate at the apex, the apical excision narrow ; median lobe bluntly pointed. *Female :* not known . . . . . **imperator*** (p. 401)

III. Descriptions of and Notes on the Species

Meligethes longiceps sp. n.

Male.—Length, 2·0 ; breadth, 0·85 mm. Elongate, slightly rounded at sides, moderately convex, brassy, with head and elytra greenish, shining, with long, conspicuous, pale pubescence ; legs dark pitchy brown. *Head* narrow, slightly longer than wide between the eyes, flat ; clypeus with its front margin distinctly bordered, widely emarginate, with side angles sharp ; surface with deep punctures equal in size to eye facets, separated by one diameter, spaces between them distinctly cross-reticulate. Antennae black, with segments one and two somewhat reddish ; club elongate, twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (0·8 : 0·45 mm.), widest close to the base, its sides feebly convergent to the anterior third, then curving strongly inwards, narrowly bordered, and narrowly explanate. Anterior margin almost straight ; front angles blunt, obtuse. Hind margin longer than the front (0·8 : 0·55 mm.), feebly convex ; hind angles rounded off. Surface with deep punctures equal in size to eye facets, separated by one and a half to two diameters, spaces between them with distinct reticulation showing a tendency to polygonal cells. *Elytra* longer than wide (1·1 : 0·85 mm.), with sides evenly gently rounded, widest in the middle, and here wider than the pronotum ; sides narrowly bordered ; hind angles widely rounded, apex of each slightly oblique, sutural angle weakly obtuse. Shoulders not strongly raised. Surface with punctures slightly larger than those of pronotum, separated by half to one diameter, spaces between them smooth. *Scutellum* triangular, with apex rounded, its

surface reticulate, with a few fine punctures in posterior half. *Pygidium* with surface granular, with conspicuous pubescence. *Ventral surface* blacker than dorsum. Prosternal process very narrow, three-quarters as wide as antennal club, its punctures much smaller than eye facets, surface between them smooth. Mesosternum unpunctured, reticulate, with a median longitudinal keel. Metasternum with punctures half as large as eye facets, separated by about one diameter, surface between them smooth; its secondary sexual



FIGS. 1–11.—Right front tibia. (1) *Meligethes longiceps* sp. n. (2) *M. simulans* sp. n. (3) *M. spissus* Grouvelle. (4) *M. culminis* sp. n. (5) *M. aethiopicus* Grouvelle. (6) *M. abstractus* Grouvelle. (7) *M. limifer* sp. n. (8) *M. adversus* sp. n. (9) *M. lividus* sp. n. (10) *M. livens* Grouvelle. (11) *M. micropunctatus* sp. n. Scale A = 0·25 mm.

character consists of a wide, deep, median longitudinal furrow, broadest at the posterior third, and here as wide as the antennal club. Abdomen with sternites closely reticulate and minutely punctured. Caudal marginal line of hind coxal cavity follows posterior edge of the latter and does not turn back until reaching its outer end. Last sternite with the curved lines very short, tending to be hidden by the preceding segment; without secondary sexual characters. *Legs* unicolorous pitchy reddish-brown; tibiae long and narrow, about four times as long as wide. Front tibiae (fig. 1) gradually slightly broadened to apex, here as wide as antennal club; outer edge scarcely visibly crenulate, with 2 or 3 minute teeth at apex; subtarsal plate narrow. Intermediate and hind tibiae broadest at apical

fifth, their outer edges furnished with close, fine, somewhat long, downwardly directed bristles. Inner edges of all tibiae almost straight, not bordered. Front tarsi narrow, two-thirds as wide as antennal club, intermediate and hind half as wide as club; last segment almost as long as first 4 together; claws simple. *Genitalia* as figured (figs. 22 and 23), somewhat short. Tegmen with broad V-shaped apical excision and short rounded lateral lobes; median lobe subparallel with flatly rounded apex.

Female.—Front tarsi half as wide as antennal club; metasternum simple or, if with a longitudinal sulcus, it is narrower and shallower than in male. Ovipositor (fig. 57) with apex piceous, long, bluntly pointed; its styli moderately long, at a distance from the apex less than their length; coxites with outer subdivisions broad, the inner rather narrow and with long narrow processes at their outer angles; "central point" almost at the third fifth, without a ventral spicule; transverse suture straight.

Type ♂, ABYSSINIA: Jem-Jem Forest, ca. 8,000 ft., from low undergrowth, ix–x. 1926 (*Dr. H. Scott*); in British Museum (Nat. Hist.).

Paratypes, ABYSSINIA: Wachacha Ravine, near Addis Ababa, ca. 8,000 ft., 9.ix.1926, "from native scrub", 2 ex.; Jem-Jem Forest, ca. 8,000 ft., 23.ix.1926 (*J. Omer-Cooper*), 2 ex.; at nearly 9,000 ft., 24.ix.1926 (*Dr. H. Scott*), 16 ex.; ca. 8,000 ft., 26.ix.1926, "from decayed parts of tree–*Euphorbia*", 1 ex.; nearly 9,000 ft., 1.x.1926, 1 ex.; at edge of forest, ca. 9,000 ft, 4.x.1926, 3 ex.; ca. 8,000 ft., 5–7.x.1926, 3 ex.; with the same data as the type, 67 ex.; and x.1926 (*J. Omer-Cooper*), 68 ex.; between "Wouramboulchi" and Jem-Jem Forest, 10.x.1926 (*J. Omer-Cooper*), 39 ex.; Gamo Province, Mt. Tola (Gughé highlands), over 10,000 ft., 5.xii.1948, "beaten from flowering herbs and bushes, near track across eastern escarpment" (*Dr. H. Scott*), 18 ex.; all in British Museum (Nat. Hist.). Lake Zwai (or Dembel), i.1912 (*Kovács*), 1 ex.; Vallis Erer (*Kovács*), 1 ex.; both in Hungarian National Museum.

Biology. Active ix, x, xii, i, at altitude 8,000–10,000 ft.

Variations. Length 1·7–2·3 mm.; colour varies considerably from brassy to dark green or blue. The pronotum may be shining in association with more diffuse punctures and shallow indistinct reticulation, or somewhat dull if the punctures are closer and the reticulation deeper and more evident.

Comparative note. The new species is undoubtedly closely related to *M. subcaeruleus* Grouvelle, to *M. sjöstedti* Grouvelle and to other species from the mountains of East Africa.

Meligethes simulans sp. n.

Male.—Length, 2·2; breadth, 1·25 mm. Elongate oval, moderately convex, dark greenish-blue, shining, the pronotum more so than the elytra, with short inconspicuous pubescence, not longer than the punctures; legs reddish-brown. *Head* transverse, triangular, feebly convex; clypeus with its front margin widely and distinctly bordered, deeply narrowly sinuate in the middle, with sides widely rounded; surface with deep punctures, slightly larger than eye facets, separated by half a diameter, the narrow spaces between them distinctly reticulate. Antennae with segments one and two reddish, then gradually darkened to the almost black club; club twice as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (1·1 : 0·65 mm.), widest at basal third, its sides feebly rounded in posterior half, more strongly convergent anteriorly, narrowly bordered, not explanate. Anterior margin shallowly concave, front angles blunt, obtuse. Hind margin longer than front (1·1 : 0·7 mm.), slightly convex, and weakly sinuate on either side of scutellum; hind angles blunt

obtuse. Surface with deep punctures, equal in size to those of head, separated by one to one and a half diameters, spaces between them shallowly cross-reticulate. *Elytra* slightly longer than wide (1·35 : 1·25 mm.), with sides evenly rounded, broadest just before the middle, and here distinctly broader than the pronotum; sides with narrow borders not visible from directly above; hind angles widely rounded, apex of each elytron gently rounded, sutural angle obtusely pointed. Shoulders not very prominent, with a distinct longitudinal sulcus running back from their outer side. Surface with punctures about equal to those of pronotum, but tending to be triangular, and feebly transrugose, separated by one and a half diameters, spaces between them deeply reticulate with multiple small polygonal cells; punctures shallower and more diffuse towards the apex. *Scutellum* with rounded apex, its surface reticulate, with shallow close punctures in apical half. *Pygidium* with surface closely granular. *Ventral surface* black, with a faint greenish metallic reflection. Prosternal process with apex rounded, one and a half times as wide as antennal club, its punctures close to apex finer than eye facets and widely spaced, surface between them smooth. Mesosternum impunctate, finely trans-strigose. Metasternum with punctures equal in size to eye facets, separated by half to one diameter, surface between them smooth; its secondary sexual character consists of a smooth median longitudinal furrow from the anterior third, where it is two-thirds as wide as antennal club, broadening posteriorly, and on either side in the mid-third a low eminence more or less devoid of punctures. Abdomen with first segment punctured almost as metasternum, succeeding segments extremely finely punctate, their surface reticulate, that of last sternite granular. Caudal marginal line of hind coxal cavity follows the posterior edge of the latter, turning back shortly before reaching its outer end. Apex of the last sternite exhibits a well-defined shining transversely concave area, twice as wide as the antennal club and half as long, its ends being slightly raised. *Legs* pitchy reddish-brown; tibiae moderately broadened. Front tibiae (fig. 2), including teeth, twice as wide as antennal club; outer edge crenulate to basal third, then with sharp narrow teeth gradually increasing in length to the penultimate; subtarsal plate broad. Intermediate and hind tibiae broadest at middle and apical third respectively, their outer edges furnished with somewhat close downwardly directed pegs, finer on hind tibiae. Inner edges of front and intermediate tibiae almost straight, of hind slightly convex, without a conspicuous raised border. Front tarsi very nearly as wide, intermediate and hind two-thirds as wide, as antennal club; last segment as long as first 4 together; claws simple. *Genitalia* as figured (figs. 24 and 25). Tegmen with short rounded lateral lobes, apical excision broad, its straight floor on a more ventral plane, median lobe somewhat explanate and shining immediately before its shortly truncate apex.

Female.—Front tarsi two-thirds, intermediate and hind, half as wide as antennal club; metasternum and last ventral segment of abdomen simple. Ovipositor (fig. 58) long and pointed, entirely reddish-yellow; with somewhat long styli at a distance from the apex slightly in excess of their length; coxites with outer subdivisions long and narrow, the inner broad with their outer angles rounded off; "central point" slightly nearer the base; transverse suture almost straight.

Type ♂, Abyssinia: edge of Jem-Jem Forest, ca. 9,000 ft., 4.x.1926 (*Dr. H. Scott*); in British Museum (Nat. Hist.).

Paratypes, Abyssinia: same data as type, 4 ♂, 1 ♀; Mulu, above Muger Valley, ca. 8,000 ft., 18–23.xii.1926, 1 ♂; in British Museum (Nat. Hist.).

Biology. Active x, xii, at altitude 8,000–9,000 ft.

Variations. Length 2·1–2·4 mm.; colour varies from bluish-green to dark blue without trace of green.

Comparative notes. Belonging to the same species-group as *M. gloriosus* Grouvelle, some members of which it closely simulates.

Meligethes spissus Grouvelle

M. spissus Grouvelle, 1908, *Ann. Mus. Stor. nat. Genova* **44** : 76.

Length, 1·8–2·0; breadth, 1·05–1·15 mm.; long oval, moderately convex; dark castaneous, shining, glabrous, pubescence being shorter than punctures. Legs pitchy reddish-brown, front tibiae (fig. 3) narrow, outer edge crenulate at least as far as the middle, with a subapical group of sharp downwardly directed teeth, usually 2 or 3, penultimate largest or equal to last; subtarsal plate conspicuous; outer edge of intermediate and hind tibiae with long close-set pegs on apical half and third respectively, their inner edges with a scarcely visible raised border. Front margin of clypeus sinuate in the middle with side angles rounded. Pronotum twice as wide as long, broadest at hind angles; base strongly sinuate on either side of scutellum, and somewhat obliquely truncate towards hind angles; its punctures, finer than eye facets, separated by two diameters, not quite attaining the base along its oblique ends, surface between punctures shallowly transversely reticulate. Elytra scarcely longer than broad; their punctures slightly larger than eye facets, more or less deep, and more or less strongly transrugose, being separated from their neighbours in the same row by one diameter, from those in adjacent rows by two diameters; surface between the punctures exhibits microscopic reticulation composed of irregular polygonal cells, distinct in the type and co-type, feeble in the female homotype, absent in the male. Prosternal process much broadened to apex, twice as wide as antennal club, apex feebly convex, its shallow punctures coarse and close anteriorly, very fine and discrete posteriorly, surface between them reticulate. Metasternum with shallow punctures as large as eye facets separated by one to two diameters, surface between them reticulate. Caudal marginal line of hind coxal cavity deviating slightly from posterior edge of latter and without rejoining it turning back at its outer third. *Male :* front tarsus two-thirds as wide as antennal club; metasternum with a shallow, puncture-free, median longitudinal depression, three-quarters as wide as antennal club, from its anterior to its posterior third, bounded on each side by a low narrow ridge, the ridges slightly convergent posteriorly; last sternite with its hind edge feebly raised at extreme apex. Aedeagus (figs. 26 and 27) short and broad. Tegmen with wide apical excision and short rounded lateral lobes; median lobe highly specialised, broadened to apical third, thence sinuately contracted to its blunt apex, with a flat lobule projecting on each side close to latter on a more ventral plane. It would appear that the median orifice is situated ventral to the apparent apex, and that this is merely the much hypertrophied operculum. *Female :* front tarsus half as wide as antennal club, front tibia narrower; metasternum and last sternite simple. Ovipositor (fig. 59) narrow, elongate, with apical part piceous; styli very long and narrow, longer than width of adjacent coxites, inserted on a wide membranous base very close to the blunt apex, outer subdivision of the coxites much shorter than the subparallel inner subdivisions; vulva nearer " central point " than apex, " central point " at two-fifths from base; transverse suture straight.

ABYSSINIA : " Abyssinie ", two co-types, ♂♀, on one card, and cotype, ♂ (*Raffray*), without further data. In Muséum National d'Histoire Naturelle, Paris. TANGANYIKA : Victoria Nyanza (Sin. Mara.), iv.1909 (*Katona*), 1 ♀; Moshi, Fl. Rau, viii.1907 (*Katona*), 1 ♂; in Hungarian National Museum.

Biology. Active iv, viii.

Comparative notes. Amongst the Abyssinian species *spissus* is easily recognisable by its colour, its oval form, its glabrous appearance, and its transrugose elytra; by the form of its front tibiae; by its male secondary sexual characters, and by the specialised genitalia in both sexes. A number of other African species combine many of these characters and may be segregated with it in a *spissus* species-group. The highly modified and curious form of the median

lobe of its aedeagus is repeated in the Indian *M. curvipes* Grouvelle, though the two species are in no way closely related.

Meligethes culminis sp. n.

Female.—Length, 1·5; breadth, 0·9 mm. Long oval, moderately convex, dark castaneous, shining, with fine, pale, recumbent pubescence; legs pitchy reddish-brown. *Head* transverse, triangular, feebly convex; clypeus with its anterior margin sinuate in middle, its side angles rounded; surface with punctures half as large as eye facets, separated by about one diameter, spaces between them smooth. Antennae pale reddish-brown, second segment yellowish; club one and a half times as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, one and a half times as wide as long (0·8 : 0·5 mm.), widest at hind angles, here as wide as base of elytra; sides convergent, almost straight to anterior third, then rounded inwards, with an extremely narrow reddish border, not explanate. Anterior margin straight for width of neck, curving forward at each end to the bluntly rounded front angles. Hind margin longer than front (0·8 : 0·55 mm.), strongly sinuate on either side of scutellum, and at each end somewhat obliquely truncate towards the blunt obtuse hind angle. Surface with deep punctures, equal in size to eye facets, separated by one and a half diameters, but absent from a narrow zone along each end of base; spaces between punctures shallowly indistinctly transreticulate. *Elytra* as long as wide, widest at basal third, with sides gently rounded and more convergent posteriorly towards the widely rounded hind angles; sutural angles sharp, obtuse; apex of each elytron gently rounded. Shoulders feebly raised. Surface with shallow punctures narrower, but more elongate, than those of pronotum, separated by about two diameters in each direction, so showing a distinct transrugosity; spaces between them with a trace of shallow reticulation. *Scutellum* with surface reticulate, and minutely punctate towards its rounded apex. *Ventral surface* with hind edges of metasternum and abdominal segments one to four reddish. Prosternal process one and a half times as wide as antennal club, with apex gently rounded; its punctures coarser and closer anteriorly, fine and discrete nearer its apex; surface smooth. Metasternum with punctures equal in size to eye facets, separated by two diameters, surface between them almost smooth; with a median longitudinal impressed line. Caudal marginal line adheres closely to hind coxal cavity, turning backwards shortly before reaching its outer end. *Legs* pitchy reddish-brown. Front tibiae (fig. 4) slightly dilated, outer edge crenulate to beyond middle, then with a group of long, somewhat sharp, downwardly directed teeth, increasing gradually in size to penultimate; subtarsal plate narrow. Intermediate and hind tibiae broader, their outer edges from basal third and middle respectively furnished with a single row of fine close downwardly directed pegs. Inner edge of front and intermediate tibiae almost straight, of hind convex at basal third, with extremely narrow raised borders. Front tarsi less than half, intermediate and hind less than one-third, as wide as antennal club, last segment as long as first four together; claws simple. *Genitalia* as figured (fig. 60). Ovipositor with apical region slightly piceous; gradually narrowed to its sharply pointed apex; with long styli distant from the apex slightly less than their length; "central point" slightly nearer the base, with an extremely short spicule; transverse suture widely V-shaped.

Male.—Unknown.

Type ♀, Abyssinia: Mt. Zuquála, forest near highest point, ca. 9,665 ft., 23.x.1926 (*Dr. H. Scott*); in British Museum (Nat. Hist.).

Paratype ♀, Abyssinia: Vallis Erer (*Kovács*); in Hungarian National Museum.

Variations. The paratype measures 1·4 mm. long, 0·8 mm. wide. The reticulation of the surface of its elytra between the punctures is less obscure than in the type.

Comparative notes. At first sight appearing closely related to *spissus* Grouvelle, the new species is however pubescent, and has an ovipositor of entirely different form. It tallies closely with the description of *similis* Grouvelle, but differs in the few essential characters noted under that heading.

Meligethes similis Grouvelle

M. similis Grouvelle, 1899, *Ann. Soc. ent. Fr.* **68** : 148.

I have been unable to locate Grouvelle's type from " Abyssinia ". From his description it is undoubtedly distinct from *spissus* Grouvelle, and differs from the preceding species in the following characters :

similis Grouvelle	*culminis* sp. n.
Clypeus : emarginate in an arc.	sinuate in the middle with side angles rounded.
Pronotum : twice as wide as long.	one and a half times as wide as long.
Caudal marginal line : turning back appreciably before reaching the outer end of the hind coxal cavity.	turning back shortly before the outer end of hind coxal cavity.

Meligethes aethiopicus Grouvelle

M. aethiopicus Grouvelle, 1908, *Bull. Mus. Hist. nat., Paris* **7** : 366.
M. aethiops Grouvelle, 1909 (*nec* Latreille, 1807), *Wissenschaftliche Ergebnisse der schwedischen zoologischen Expedition nach dem Kilimandjaro, dem Meru, u.s.w.*, 1905–06, **1 : 316, syn. nov.**.
M. meruensis Easton, 1950, *Ent. mon. Mag.* **86** : 308, **syn. nov.**

Length 2·7–3·2 mm.; breadth 1·4–1·7 mm. Long oval, moderately convex ; black, not very shining, with fine yellowish recumbent pubescence. Legs reddish-brown, front pair lighter ; tibiae much broadened, nearly half as wide as long ; outer edge of front tibiae (fig. 5) with numerous small sharp teeth from basal fourth, at basal third is a small more prominent tooth, and beyond apical third is a group of slightly longer teeth of which the first and penultimate tend to be more prominent than those between them ; inner edge of intermediate and hind tibiae with a narrow raised border, their posterior surface with an oblique groove for the reception of the tarsus, rendered distinct by a fringe of pubescence. Front margin of clypeus widely, moderately deeply, emarginate, with side angles sharp. Antennae with club subtruncate, as broad as long, two and a half times as wide as first antennal segment. Pronotum not quite twice as wide as long, broadest at basal fourth, base moderately sinuate on either side of scutellum ; its deep punctures equal in size to eye facets, separated by about one diameter, surface between them shallowly cross-reticulate. Elytra as long as wide, their punctures quite twice as wide as the eye facets, the hair from each appearing to emerge from a minute central papilla, punctures separated by slightly less than one diameter, surface between them smooth or with a trace of cross-reticulation. Prosternal process subtruncate, one and a third times as wide as antennal club, its punctures equal in size to the eye facets and separated by half to one diameter, spaces between them smooth ; metasternum with punctures one and a half times as large as eye facets, separated by half to one diameter, but more diffuse along the midline, surface between them smooth ; posterior edge of the hind coxa angled at its inner third so that from this point the caudal marginal line is slightly divergent, rejoining it, and turning back shortly before its outer end. *Male :* front tarsi slightly dilated, a little more than half as wide as antennal club ; pronotum subparallel in basal half, therefore appearing broader ; metasternum without secondary sexual characters ; last sternite with a raised shining slightly curved ridge,

concave backwards, close to its apex, this ridge being about the fifth part of a circle. Aedeagus with tegmen (fig. 28) subparallel, a deep wide, somewhat U-shaped, apical excision separating its somewhat narrow lateral lobes; median lobe (fig. 29) gradually narrowed from middle, its apex obtusely pointed. *Female:* ovipositor (fig. 61) with apex piceous, long and somewhat sharply pointed; with short styli at a distance from the apex less than their length; outer subdivisions of coxites long and narrow; "central point" central, with a short ventral spicule; transverse suture straight. Each ovary with seven ovarioles.

Readily distinguished by its large size, broad oval form, the shape of its antennal club, its wide tibiae with raised border to their inner edge, and by the large circumfossate punctures of its elytra.

Abyssinia: Endessa, on upper course of River Hawash, about 82 miles E.S.E. of Addis Ababa, ca. 3345 ft., 2.ix.1905, 1 ♀ (type), ix.1905, 1 ♂ (cotype), 1905 (*Maurice de Rothschild*); in Muséum National d'Histoire Naturelle, Paris.

Tanganyika: Meru, lower slopes, 1 ♀ (type), xii.1905, 1 ♂ (cotype), i (*Sjöstedt*); in Naturhistoriska Riksmuseum, Stockholm.

Italian Somaliland: Coromma, x–xi.1893 (*Ruspoli*), 1 ♀, in my collection. This specimen, which bears a ms. label: "*Meligethes* n. sp. *t.* Grouvelle", has narrower tibiae than the type and cotype. Otherwise it agrees well with them, and having an identical ovipositor, I regard it as conspecific.

Meligethes abstractus Grouvelle

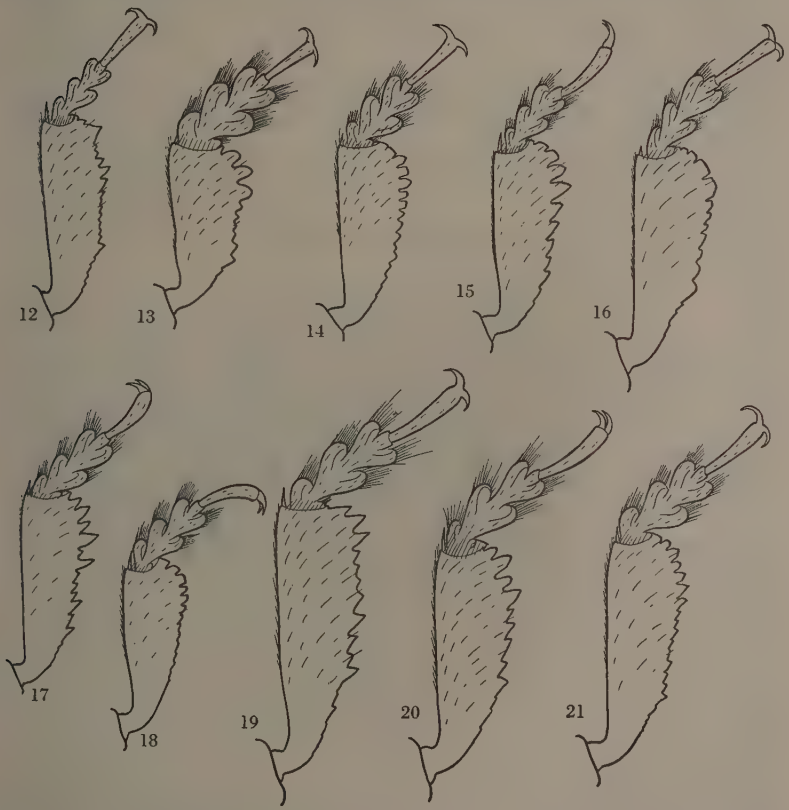
M. abstractus Grouvelle, 1908 (Nov. 20th), *Ann. Mus. Stor. nat. Genova* **44**: 75.
M. quadridentatus Grouvelle, 1908 (subsequent to 24th Nov.), *Bull. Mus. Hist. nat., Paris* **7**: 368, **syn. nov.**

Dissection of Grouvelle's type of *quadridentatus* proves it to be a female, and to be identical in all respects with homotypes of *abstractus* Grouvelle, which I had previously compared with a cotype (♀) of this species loaned from the Genoa Museum.

Length 1·7–2·2; breadth 0·9–1·05 mm.; elongate, subparallel, not strongly convex; black, pronotum more shining than the elytra, with long conspicuous white or yellowish pubescence (easily rubbed). Legs entirely black, tibiae long and narrow; front tibiae (fig. 6) with outer edge very variable, usually with numerous teeth from the basal fourth, the teeth usually sharp, often long and pectinate, sometimes short and blunter, in size even or very uneven, but the penultimate always the largest; outer edge of intermediate tibiae with somewhat long close-set pegs; inner edge of intermediate and hind tibiae without a conspicuous border. Front margin of clypeus widely, somewhat deeply, emarginate, leaving the side angles sharp. Pronotum one and a third times as wide as long, widest at posterior fourth; base scarcely sinuate on either side of scutellum; its deep punctures one and a half times as large as eye facets, separated by half to one diameter, surface between them smooth. Elytra one and a third times as long as wide; their punctures, as fine as eye facets, separated by one diameter with surface between them smooth, exhibit well-marked transrugosity. Prosternal process rounded at apex, scarcely broader than antennal club, densely punctate, dull; metasternum somewhat diffusely punctured, shining; caudal marginal line of hind coxal cavity running close to the posterior edge of the latter and turning back shortly before its outer end. *Male:* front tarsi two-thirds as wide as antennal club; metasternum without secondary sexual characters; last sternite with a minute apical notch. Aedeagus (figs. 30 and 31) moderately elongate; tegmen

narrowed from apical third, with short rounded lateral lobes, and narrow elongate apical excision ; median lobe narrowed from apical third, with apex somewhat rounded.

Female : front tarsus half as wide as antennal club. Ovipositor (fig. 62) with apex deeply piceous ; its somewhat long styli inserted at the apex ; inner subdivisions of coxites long, narrow, subparallel, the outer exceptionally short and broad ; " central point " very slightly nearer the base, without a ventral spicule ; transverse suture straight.



FIGS. 12–21.—Right front tibia (12) *M. maureenae* sp. n. (13) *M. latimanus* sp. n. (14) *M. mauritii* Grouvelle. (15) *M. altercatio* sp. n. (16) *M. coronatus* sp. n. (17) *M. scotti* Easton. (18) *M. subcaerulescens* Grouvelle. (19) *M. fossilis* sp. n. (20) *M. subexilis* Grouvelle. (21) *M. imperator* sp. n.

M. abstractus is easily recognised by the fine close transrugose punctures of its elytra, its conspicuous silvery white pubescence, its narrow entirely black tibiae, and by the specialised form of its ovipositor.

ABYSSINIA : Wachacha Ravine, near Addis Ababa, ca. 8,000 ft., 9.ix.1926, " from native scrub ", 1 ♀ ; Jem-Jem Forest, ix.1926 (*J. Omer-Cooper*), 1 ♀ ; ca. 8,000 ft., ix–x.1926, " from low undergrowth ", 1 ♂, 1 ♀ ; nearly 9,000 ft., 24.ix.1926, 1 ♀ ; and ca. 8,000 ft., 7.x.1926, 1 ♀ ; Mt. Zuquála,

ca. 9,000 ft., 22.x.1926, " beaten from trees near lake shore ", 1 ♂; forest near highest point, ca. 9,665 ft., 23.x.1926, 1 ♀; and in crater, ca. 9,000 ft., 26.x.1926 (*J. Omer-Cooper*), 1 ♀; Mt. Chillálo forest, ca. 9,800 ft., 14.xi.1926, 1 ♀; Simien, east of Mindigabsa, over 10,000 ft., 16.xi.1952, " from dry soil in roots of tufted plants overhanging a stream ", 1 ♀; Derasghié, ca. 9,800 ft., 22.xii.1952, " from flowering trees and bushes ", 1 ex.; near Mindigabsa, ca. 10,000 ft., 29.xii.1952, 1 ex.; all in British Museum (Nat. Hist.). Chercher (Tschertscher) (*Kovács*), 1 ♀; Vallis Erer (*Kovács*), 1 ♂, 1 ♀; in Hungarian National Museum.

Italian Somaliland: Shotalit (Sciotalit), about 75 miles N.E. of Addis Ababa, ca. 6,000 ft., viii.1887 (*Rauazzi*), 1 ♀ (cotype); in Museo Civico di Storia Naturale, Genoa.

The species also occurs in Eritrea: Asmara, v.1939 (*F. Vaccaro*), in the Genoa Museum.

Biology. Has been taken in v, viii, ix, x, xi, xii, and is found in the soil in November; altitude 8,000–10,000 ft.

Meligethes limifer sp. n.

Female.—Length, 2·2; breadth, 1·25 mm. Elongate, subparallel, not strongly convex, entirely jet black, somewhat shining, with fine silvery pubescence; legs black, front tibiae slightly reddish. *Head* transverse, triangular, feebly convex; front margin of clypeus distinctly bordered, widely moderately deeply emarginate, with side angles sharp; surface with deep punctures equal in size to eye facets, separated by half a diameter, spaces between them smooth. Antennae black, segment two slightly reddish; club long oval, two and a quarter times as wide and almost twice as long as first antennal segment. *Pronotum* transverse, nearly twice as wide as long (1·2 : 0·65 mm.), widest at basal fifth, its sides scarcely rounded in the hind three-quarters, curving inwards anteriorly, extremely narrowly bordered, not explanate. Anterior margin shallowly concave, front angles rounded, obtuse. Hind margin longer than front (1·2 : 0·8 mm.), weakly convex, and feebly sinuate on either side of scutellum; hind angles blunt, obtuse. Surface with punctures slightly smaller than eye facets, separated by about one diameter, spaces between them smooth. *Elytra* as long as wide (1·2 : 1·25 mm.), subparallel, scarcely wider than pronotum; sides narrowly bordered; hind angles widely rounded, apex of each elytron feebly convex, sutural angle obtusely pointed. Shoulders scarcely evident; an obscure longitudinal stria external to each. Surface with punctures distinctly and closely transrugose; punctures equal in size to those of pronotum, separated by one and a half to two diameters, spaces between them smooth. *Scutellum* with apex rounded, its surface reticulate and minutely punctured. *Pygidium* with surface granular. *Ventral surface* black. Prosternal process with apex subtruncate, one and a third times as wide as antennal club, its deep punctures slightly larger than eye facets, separated by half a diameter, surface between them smooth. Metasternum with punctures of equal size and spacing, surface between them smooth. First ventral segment of abdomen with slightly smaller punctures separated by one and a half diameters, surface between them smooth; the succeeding segments minutely punctured, and with surface reticulation. Caudal marginal line of hind coxal cavity runs close to the posterior edge of the latter, turning back shortly before reaching its outer end. *Legs* black, front tibiae faintly reddish. Front tibiae (fig. 7) gradually broadened towards the apex, here nearly twice as wide as antennal club, outer edge finely denticulate from basal fourth, the minute teeth gradually enlarging to the penultimate, so that a line joining their apices would be straight; subtarsal plate rather narrow. Intermediate and hind tibiae broadest at middle and apical third respectively, their outer edges furnished from the broadest point with fine, very close, downwardly directed pegs. Inner edge of hind tibiae

slightly convex at basal third, like the others without a raised border. Front tarsi half, intermediate and hind a third as wide as antennal club ; last segment as long as first four together ; claws simple. *Genitalia* as figured (fig. 63). Ovipositor unicolorous reddish yellow, long and sharply pointed ; the very short styli at a distance from the apex slightly greater than their length ; coxites with outer subdivisions long and very narrow ; " central point " central, without a ventral spicule ; transverse suture almost straight.

Male.—Unknown.

Type, a unique ♀, Abyssinia : Vallis Erer (*Kovács*) ; in Hungarian National Museum.

Comparative notes. Probably related to many of the very numerous East African species which combine transrugosity of the elytra, an intense black colour, and somewhat low convexity. The outer edge of its front tibiae is reminiscent of that of the European *assimilis* Sturm, though its teeth are smaller.

Meligethes adversus sp. n.

Male.—Length, 1·85 ; breadth, 0·85 mm. Elongate, subparallel, moderately convex, deep black, shining, with fine recumbent yellowish pubescence ; legs black, with basal segments of tarsi reddish. *Head* triangular, not strongly transverse, feebly convex ; clypeus with its front margin bordered, widely emarginate, with side angles sharp ; surface with deep punctures equal in size to eye facets separated by half to one diameter, spaces between them shallowly reticulate. Antennae black, with segment two slightly reddish ; club oval, nearly twice as long, and two and a half times as wide as first antennal segment. *Pronotum* transverse, slightly more than one and a half times as wide as long (0·8 : 0·5 mm.), widest at middle ; sides gradually rounded and convergent towards base, more strongly so anteriorly, distinctly bordered, not explanate. Anterior margin shallowly concave, front angles obtuse, blunt. Hind margin longer than the front (0·75 : 0·55 mm.), weakly convex, without sinuations ; hind angles obtusely pointed. Surface with punctures as large as eye facets, separated by one to one and a half diameters, spaces between them shallowly cross-reticulate. *Elytra* longer than wide (1·0 : 0·85 mm.), with sides gently rounded, and narrowly bordered, widest at middle ; hind angles widely rounded, each apex subtruncate, sutural angle obtusely pointed. Shoulders weakly raised, humeral striae very indistinct. Surface with punctures one and a half times as large as eye facets, separated by one and a half to two diameters, spaces between them with shallow reticulation tending to form polygonal cells. *Scutellum* with apex rounded, its surface minutely punctate and reticulate. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process one and a quarter times as wide as antennal club, with apex rounded ; its punctures somewhat smaller than eye facets separated by half to one diameter, surface between them smooth. Mesosternum unpunctured, reticulate. Metasternum with punctures as large as eye facets separated by one and a half diameters, surface between them smooth ; the male secondary sexual characters consist of a triangular flattening in the hind three quarters and of a shallow median longitudinal linear impression. Abdomen with first sternite having punctures almost equal in size to those of metasternum, separated by half a diameter, remaining sternites much more finely punctate. Caudal marginal line of hind coxal cavity deviates slightly from the posterior edge of the latter, and rejoins it shortly before turning back close to its outer end. Last sternite without secondary sexual characters. *Legs* black, with tarsi reddish. Front tibiae (fig. 8) not strongly dilated, one and a third times as wide as antennal club ; outer edge finely crenulate almost to apical third, then with a series of small subequal somewhat blunt teeth, the apices of which give the edge of the tibia an evenly rounded contour ; subtarsal plate inconspicuous. Intermediate and hind tibiae narrow, subparallel, their outer edges furnished from basal third with very short, close, downwardly directed pegs. Inner edge of front and intermediate tibiae straight, of hind feebly convex

at basal third; not bordered. Front tarsi as wide as antennal club, intermediate and hind half as wide; last segment slightly shorter than first four together; claws simple. *Genitalia* as figured (figs. 32 and 33). Tegmen gradually narrowed from the middle, with short rounded lateral lobes bounding the shallow U-shaped apical excision; median lobe subparallel to apical fourth, then contracted to the bluntly pointed apex; apical portion shortly explanate.

Female.—Front tarsi slightly more dilated than in male, one and a third times as wide as antennal club. Metasternum simple. Ovipositor (fig. 64) rather short, entirely yellowish, gradually narrowed to its somewhat pointed apex, without a corona; the short styli at a distance from the apex equal to their length; "central point" central, with a very short ventral spicule; transverse suture straight.

Type ♂, Abyssinia: Mt. Zuquála, ca. 9,000 ft., 22.x.1926 (*Dr. H. Scott*); in the British Museum (Nat. Hist.).

Paratypes, Abyssinia: Wachacha Ravine, near Addis Ababa, ca. 8,000 ft., 9.ix.1926, "from native scrub", 1 ♂, 3 ♀; near Addis Alam, ca. 8,000 ft., 18–19.ix.1926, "cultivated country", 4 ex.; between Addis Alam and Jem-Jem, 7,000–8,000 ft., 20.ix.1926, "swept in grass field" (*J. Omer-Cooper*), 1 ♀; Jem-Jem Forest, ix.1926 (*J. Omer-Cooper*), 1 ♀; Jem-Jem Forest, damp shady places, 8,000–9,000 ft., 21–22.ix.1926, 3 ex.; and ca. 8,000 ft., 5–7.x.1926, 2 ♂, 1 ♀; Mt. Zuquála, ca. 9,000 ft., 21–25.x.1926, 4 ex.; ca. 9,000 ft., 22.x.1926, 26 ex. (including 10 ♂, 12 ♀); and 1 ex. "beaten from trees near lake shore"; in crater, ca. 9,000 ft., 26.x.1926 (*J. Omer-Cooper*), 52 ex. (including 14 ♂, 15 ♀); Mt. Chillálo, forest ca. 9,000 ft., 14.xi.1926, 2 ♂, 4 ♀; Wolamo Prov., Soddu, ca. 6,800 ft., 21–25.x.1948, 1 ♀; and 27.x.1948, "beaten from flowers of Compositae, etc.", 2 ♂, 4 ♀; Wolamo Prov., spur of Mt. Damota, over 8,000 ft., 28.x.1948, "swept from bushes and flowers", 2 ♀; all in British Museum (Nat. Hist.). Vallis Erer (*Kovács*), 4 ♂; in Hungarian National Museum.

Biology. Active ix, x, at altitude 6,800–9,000 ft.

Variations. Length 1·8–2·1 mm. The tarsi are sometimes concolorous with the tibiae.

Comparative notes. M. adversus exhibits many of the features shared by the members of the *forcipatus* species-group; it is, however, larger and lacks the well-developed male secondary sexual characters on the last ventral segment of the abdomen.

Meligethes lividus sp. n.

Male.—Length, 1·45; breadth, 0·75 mm. Elongate, subparallel, moderately convex, black, not very shining, with distinct recumbent silvery pubescence; legs dark reddish-black. *Head* transverse, triangular, feebly convex; clypeus with its anterior margin distinctly bordered, widely emarginate, with its side angles sharp; surface with punctures slightly smaller than eye facets, separated by half to one diameter, the very narrow spaces between them cross-reticulate. Antennae reddish-black, with second segment lighter; club one and two-thirds times as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, less than twice as wide as long (0·75 : 0·4 mm.), widest at basal third; sides subparallel in basal half, more rounded and convergent anteriorly, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angle. Hind margin longer than the front (0·7 : 0·5 mm.), feebly, evenly convex; hind angles blunt, obtuse. Surface with punctures

equal in size to eye facets, separated by about one diameter, spaces between them cross-reticulate. *Elytra* longer than broad (0·85 : 0·75 mm.), subparallel, but widest in middle, and here very feebly wider than pronotum ; sides narrowly bordered ; hind angles widely rounded, sutural angles sharp, obtuse ; apex of each elytron gently rounded. Shoulders feebly raised. Surface with moderately deep punctures, slightly larger than those of pronotum, separated by one to one and a half diameters, spaces between them reticulate. *Scutellum* with apex rounded, minutely punctate in apical half. *Pygidium* with surface finely granular. *Ventral surface* black. Prosternal process narrow, as wide as antennal club, with apex rounded ; its deep punctures equal in size to eye facets, separated by half to one diameter, surface between them smooth. Mesosternum unpunctured, reticulate, with a small fovea close to each hind angle. Metasternum with deep punctures slightly larger than eye facets, separated by half a diameter, surface between them smooth ; secondary sexual characters consisting of a median longitudinal sulcus, and on either side of this just anterior to the middle a low rounded eminence. Abdomen with first sternite punctured on disc more or less as metasternum, but at sides granulo-reticulate ; apex of last sternite (fig. 56) with an abrupt excision twice as wide as prosternal process and half as deep ; the angles bounding it appearing almost spinous. Caudal marginal line of hind coxal cavity deviating very slightly onto the first sternite, rejoining its posterior edge and turning back again shortly before reaching its outer end. *Legs* dark reddish-black, front tibiae and tarsi lighter reddish. Front tibiae (fig. 9) moderately broadened to apical fourth, here one and two-thirds times as wide as antennal club ; outer edge finely crenulate close to base, then with gradually developing teeth to a group of four bluntly pointed teeth in apical third, the apices of which give to the tibia an evenly rounded contour ; subtarsal plate inconspicuous. Intermediate tibiae broadest at middle, hind at apical third, their outer edge beyond the widest point with fine, close, downwardly directed pegs. Inner edge of all tibiae slightly convex, of hind mostly at basal third, without conspicuous raised borders. Front tarsi dilated, very slightly broader than antennal club, intermediate two-thirds, hind half as wide as club ; last segment shorter than first four together ; claws simple. *Genitalia* as figured (figs. 34 and 35). Tegmen strongly narrowed from shoulders at apical third and very feebly sinuate on either side at base of the short rounded lateral lobes, apical excision short, U-shaped ; median lobe parallel-sided, with apex rounded.

Female.—Tarsi not perceptibly narrower than in male ; metasternum and last sternite simple. Ovipositor (fig. 65) entirely yellowish, somewhat abruptly contracted close to its rather pointed apex, without a corona ; its short styli at a distance from the apex slightly in excess of their length ; " central point " almost central, with a very short ventral spicule ; transverse suture straight.

Type ♂, Abyssinia : Simien, Lori, ca. 11,500 ft., in precincts of church, beaten from *Senecio myriocephalus* A. Rich, 27.xi.1952 (*Dr. Hugh Scott*) ; in British Museum (Nat. Hist.).

Paratypes ♀, Abyssinia : Mulu, above Muger Valley, ca. 8,000 ft., 18–23. xii.1926 (*Dr. H. Scott*), 2 ex.; in British Museum (Nat. Hist.).

Biology. Occurring xi, xii ; altitude 8,000–11,500 ft.

Comparative notes. A member of the *forcipatus*[2] species-group, with other members of which it corresponds in its general facies, its small size, the form of its front tibiae, and in the type of the male secondary sexual character of its last ventral abdominal segment. Very closely related to *M. livens* Grouvelle but with slightly narrower tibiae and front tarsi, with distinct reticulation of the surface of its elytra, and with its ovipositor more abruptly narrowed to the apex. Wider knowledge of the two, and especially discovery of the male of *livens* is highly desirable. Their common identity is a possibility.

[2] *M. forcipatus*, from Natal, awaits description.

Meligethes livens Grouvelle

M. livens Grouvelle, 1908, *Ann. Mus. Stor. nat. Genova* **44** : 77.

Length, 1·6, breadth, 0·8 mm.; elongate, subparallel, not strongly convex; black, not very shining, with conspicuous yellowish pubescence. Legs pitchy reddish-brown, slightly more than one third as wide as long; outer edge of front tibiae finely crenulate at base, with gradually developing teeth to apical third, then with a group of four blunt teeth, whose apices form an evenly rounded contour; subtarsal plate inconspicuous. Clypeus with front margin widely shallowly emarginate with side angles sharp. Pronotum one and a half times as wide as long, scarcely rounded at sides, subparallel; base feebly sinuate on either side of scutellum; its punctures equal in size to eye facets, separated by half to one diameter, surface between them cross-reticulate. Elytra scarcely wider than pronotum, slightly longer than broad; their punctures one and a half times as large as eye facets, separated by half a diameter, surface between them smooth. Prosternal process one and a half times as wide as antennal club, its punctures smaller than eye facets and absent close to its flatly rounded apex; metasternum with punctures equal in size to eye facets, separated by two diameters; caudal marginal line of hind coxal cavity simple. *Male:* unknown. *Female:* front tarsus as wide as antennal club. Ovipositor (fig. 66)[3] unicolorous yellowish; somewhat gradually narrowed to apex; with short styli at a distance from the apex equal to their length; " central point " centrally placed; transverse suture straight.

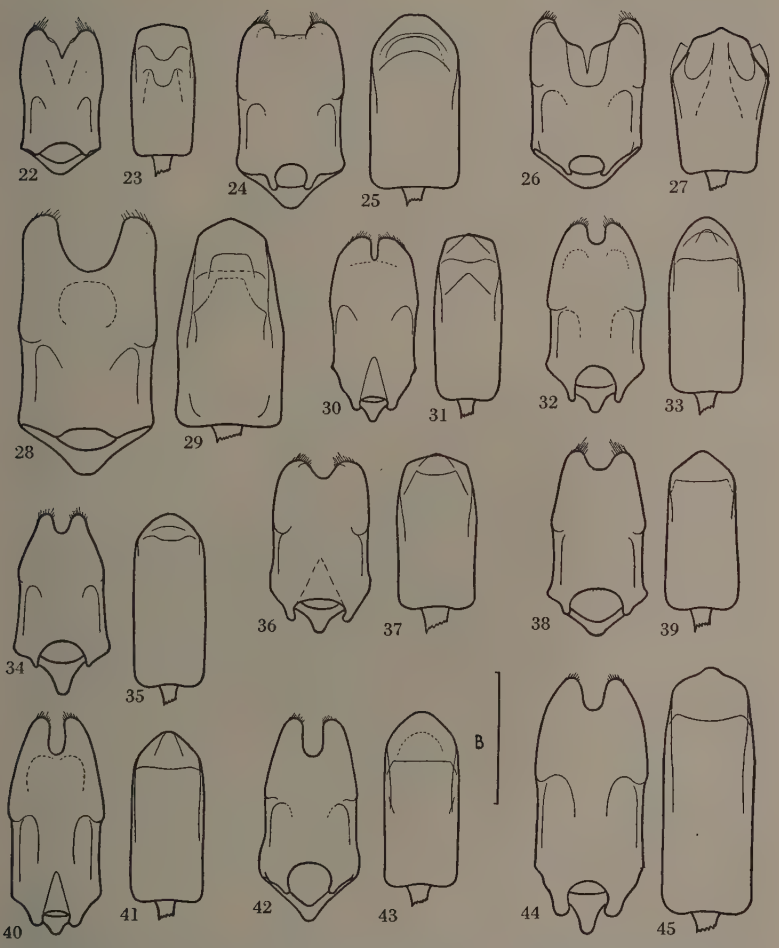
M. livens is extremely similar to the preceding species, from which it is distinguished by its broader tibiae and front tarsi, the absence of reticulation of its elytra, and by its ovipositor being apparently more gradually narrowed to the apex. No doubt *livens*, too, is a member of the *forcipatus* species-group.

Type specimen from "ABYSSINIA" (*Raffray*), without further data.

Meligethes micropunctatus sp. n.

Male.—Length, 2·0; breadth, 1·0 mm. Elongate, parallel-sided, not strongly convex, deep black, not very shining, with short silvery pubescence; legs black. *Head* transverse, triangular, feebly convex; clypeus with front margin distinctly bordered, widely emarginate, with side angles sharp; surface with punctures almost as large as eye facets, separated by half a diameter, spaces between them reticulate. Antennae black; club long oval, one and two-thirds times as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (0·95 : 0·55 mm.), widest at basal third, its sides scarcely rounded, but curving inwards anteriorly, distinctly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angle. Hind margin longer than the front (0·925 : 0·65 mm.), almost straight, with feeble sinuation on either side of scutellum; hind angles obtuse, bluntly pointed. Surface with punctures almost as large as eye facets, separated by one diameter anteriorly, by two diameters on the disc, spaces between them distinctly, mostly cross-reticulate. *Elytra* slightly longer than wide (1·1 : 1·0 mm.), widest in middle, and here slightly wider than pronotum, their sides feebly rounded, narrowly bordered; hind angles widely rounded, apex of each elytron slightly obliquely subtruncate, sutural angle rectangular, Shoulders scarcely raised. Surface with shallow punctures no larger than those of pronotum, separated by one and a half diameters, spaces between them with distinct reticulation comprising multiple polygonal cells. *Scutellum* with apex rounded, surface reticulate and minutely punctured. *Pygidium* with surface closely granulate. *Ventral surface* black. Prosternal process with apex rounded, scarcely broader than antennal club, its punctures

[3] This organ was very immature and partly deformed as the result of long-standing extrusion; the figure is in part reconstructed.



FIGS. 22–45.—Aedeagi. (22) Dorsal view of tegmen of *Meligethes longiceps* sp. n. (23) Dorsal view of median lobe of *M. longiceps* sp. n. (24) Tegmen of *M. simulans* sp. n. (25) Median lobe of *M. simulans* sp. n. (26) Tegmen of *M. spissus* Grouvelle. (27) Median lobe of *M. spissus*. (28) Tegmen of *M. aethiopicus* Grouvelle. (29) Median lobe of *M. aethiopicus*. (30) Tegmen of *M. abstractus* Grouvelle. (31) Median lobe of *M. abstractus*. (32) Tegmen of *M. adversus* sp. n. (33) Median lobe of *M. adversus* sp. n. (34) Tegmen of *M. lividus* sp. n. (35) Median lobe of *M. lividus* sp. n. (36) Tegmen of *M. micropunctatus* sp. n. (37) Median lobe of *M. micropunctatus* sp. n. (38) Tegmen of *M. latimanus* sp. n. (39) Median lobe of *M. latimanus* sp. n. (40) Tegmen of *M. mauritii* Grouvelle. (41) Median lobe of *M. mauritii*. (42) Tegmen of *M. altercatio* sp. n. (43) Median lobe of *M. altercatio* sp. n. (44) Tegmen of *M. coronatus* sp. n. (45) Median lobe of *M. coronatus* sp. n. Scale B = 0·25 mm.

half as large as eye facets, separated by one diameter, surface between them smooth. Mesosternum unpunctured, reticulate. Metasternum with punctures equal in size to eye facets, separated by one to one and a half diameters, surface between them smooth; secondary sexual characters comprising a triangular flattening and a median longitudinal impression in the posterior two-thirds. Abdomen with all segments minutely and somewhat diffusely punctured. Caudal marginal line of hind coxal cavity follows its posterior edge at a little distance, rejoining it and then turning back, shortly before reaching its outer end. Last sternite with a very small apical emargination and in front of this a shallow transverse impression. *Legs* black, tibiae narrow, about three times as long as wide. Front tibiae (fig. 11) scarcely broadened, one and a quarter times as wide as antennal club; their outer edge with a very small outstanding tooth at basal third, widely separated by a series of irregular crenulations from a group of small sharp teeth close to apex, of which the first and penultimate are longer than those between; subtarsal plate inconspicuous. Intermediate tibiae subparallel from second to fourth fifth; hind with outer edge convex at apical fourth, inner at basal third; outer edges with short close pegs from basal fourth and apical third respectively; inner edges without a raised border. Front, intermediate, and hind tarsi three-quarters, two thirds, and half as wide respectively as antennal club; the very narrow last segment almost as long as the first four together; claws simple. *Genitalia* as figured (figs. 36 and 37). Tegmen scarcely narrowed from shoulders, with short, rather broad, rounded lateral lobes, and shallow, almost V-shaped apical excision; median lobe subparallel, with flatly rounded apex.

Female.—Tarsi as in male; metasternum and last ventral segment of abdomen simple. Ovipositor (fig. 67) acutely pointed, reddish-yellow, with occasional slight piceous pigmentation at apex; its short stout styli at a distance from the apex slightly less than their length; coxites with inner subdivisions broad, outer long and narrow; "central point" very slightly nearer apex, without a ventral spicule; transverse suture straight.

Type ♂, Abyssinia: Gamo Prov., Bonghé valley (Gughé highlands), ca. 9,500–10,000 ft., "sifted from humus under bamboos near waterfall, south side of valley", 8.xii.1948 (*Dr. H. Scott*); in British Museum (Nat. Hist.).

Paratypes, Abyssinia: with similar data to the type, 3 ex.; Wachacha Ravine, near Addis Ababa, ca. 8,000 ft., 9.ix.1926, "from native scrub", 1 ex.; near Addis Alam, ca. 8,000 ft., 18–19.ix.1926 (*J. Omer-Cooper*), 1 ex.; Jem-Jem Forest, ca. 8,000 ft., 23.ix.1926 (*J. Omer-Cooper*), 7 ex.; nearly 9,000 ft., 24.ix.1926, 3 ex.; Mt. Chillálo, forest, ca. 8,500 ft., 22.xi.1926, "from flower spike of *Buddleia polystachya* Fres., 1 ex.; "Wouramboulchi", 6.x.1926 (*J. Omer-Cooper*), 1 ex.; Mt. Chillálo, Digalla, ca. 9,500 ft., 27.xi.1926, 2 ex.; Mulu, above Muger Valley, ca. 8,000 ft., 18–23.xii.1926, 1 ex.; Wolamo Prov., Soddu, ca. 6,800 ft., 21–25.x.1948, 1 ex., 21.x.–14.xi.1948, 1 ex., and 27.x.1948, "beaten from flowers of Compositae, etc.", 2 ex.; Wolamo Prov., spur of Mt. Damota, over 8,000 ft., 28.x.1948, 3 ex., "swept from bushes and flowers", 4 ex., and "from peat soil under boulders sunk in turf", 2 ex.; Mt. Damota, ca. 9,600–10,000 ft., 4–6.xi.1948, "400–800 ft. below highest summit", 1 ex., and over 10,000 ft., 5.xi.1948, "from grassy slopes on summit and near spring", 3 ex.; Gamo Prov., Mt. Tola (Gughé Highlands), ca. 9,800 ft., 13.xii.1948, 1 ex.; and ca. 10,600 ft., 18.xii.1948, "in roots of grass tufts and ferns", 1 ex.; Simien, near Mindigabsa, over 10,000 ft., 16.xi.1952, "beaten from *Erica arborea*", 23 ex., "in or near torrent", 1 ex.; Simien, Khabau (near Ghitche), ca. 11,000 ft., 18.xi.1952, "beaten from *Senecio confertus*", 1 ex.; Simien, Arghine, 11,500 ft. or higher, 24.xi.1952, "near torrent in peat soil, under boulders or at roots of plants", 2 ex.; Simien, Lori, ca. 11,500 ft., 27.xi.1952, "in precincts of church, beaten from *Senecio*

myriocephalus", 6 ex.; above Lori, ca. 12,000 ft., 28.xi.1952, "from soil at base or in dead stems of *Lobelia rhynchopetalum*," 1 ex.; Simien, near Mindigabsa, ca. 10,000 ft., 29.xii.1952, 1 ex.; all in British Museum (Nat. Hist.). Vallis Erer (*Kovács*), 8 ex.; in Hungarian National Museum.

Biology. Active ix, x, xi, xii. Resting in soil xi, xii. At altitudes 6,800–12,000 ft.

Variations. Length 1·6–2·3 mm. The pubescence varies slightly in colour and is easily rubbed. The sides of the pronotum are at times slightly more rounded than in the type; and the degree of deviation of the caudal marginal line of the hind coxal cavity is subject to slight variation.

Comparative notes. The species is well characterised by its general form, coupled with the minute punctures of its upper surface, and the distinct reticulation between those of its elytra. Further research is necessary before its close affinities can be determined.

Meligethes maureenae sp. n.

Female.—Length, 2·0; breadth, 1·15 mm. Elongate, somewhat rounded at sides, moderately convex, black, somewhat dull, with fine close yellowish pubescence; legs dark reddish pitchy. *Head* transverse triangular, feebly convex; clypeus with its front margin bordered, widely emarginate, with side angles sharp; surface with punctures slightly smaller than eye facets, separated by one diameter, spaces between them reticulate. Antennae black with second segment lighter; club oval, two and a half times as wide, and twice as long, as first antennal segment. *Pronotum* transverse, somewhat less than twice as wide as long (1·1 : 0·65 mm.), widest at base; its sides convergent, and feebly rounded posteriorly, more strongly so anteriorly, very narrowly bordered and narrowly somewhat explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angle. Hind margin longer than front (1·1 : 0·65 mm.), feebly convex and weakly sinuate on either side of scutellum; hind angles obtusely pointed. Surface with punctures equal in size to eye facets, separated by slightly less than one diameter, spaces between them distinctly reticulate. *Elytra* as long as wide (1·1 mm.), with sides gently rounded and distinctly bordered, widest in middle; hind angles widely rounded, each apex feebly convex, sutural angles obtusely pointed. Shoulders weakly raised, humeral striae feebly impressed. Surface with punctures half as large again as those of pronotum, separated by one diameter, spaces between them extremely feebly reticulate, almost smooth. *Scutellum* with rounded apex, its surface reticulate and finely punctate. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process one and a third times as wide as antennal club, its deep punctures as large as eye facets, separated by one diameter, surface between smooth. Mesosternum impunctate, reticulate. Metasternum with punctures as large as eye facets, separated by half to one diameter, surface between them smooth. Abdomen with sternites finely and shallowly punctate, and with surface reticulation. Caudal marginal line of hind coxal cavity follows closely posterior edge of the latter, turning backwards shortly before reaching its outer end. *Legs* unicolorous reddish piceous. Front tibiae (fig. 12) subparallel, narrow, one and a quarter times as wide as antennal club; outer edge with a small sharp prominent tooth at basal third, separated by a series of crenulations from a group of larger sharp teeth close to apex; of this group one of the first and the penultimate are largest, with much smaller teeth between them; subtarsal plate inconspicuous. Intermediate tibiae subparallel, hind widest at apical third, their outer edges furnished from basal fourth and middle respectively with fine, short, close, downwardly-directed pegs. Inner edge of front tibiae straight, of intermediate and hind feebly convex; not bordered. Front tarsi half as wide as antennal club, intermediate and hind slightly narrower; last segment of tarsi almost as long as first four together;

claws simple. *Genitalia* (fig. 68) drawn from an immature and slightly folded organ. Ovipositor yellowish, with apex slightly piceous, somewhat pointed, with short styli at a distance from the apex equal to their length; coxites with outer subdivisions long and tapering apically; "central point" slightly beyond the middle, apparently with a long fine ventral spicule; transverse suture feebly inversely V-shaped.

Male.—Unknown.

Type ♀, ERITREA: Asmara, 19.v.1939 (*F. Vaccaro*); in my collection.

Paratype ♀, ERITREA: Dorfü, v.1939 (*F. Vaccaro*); in Museo Civico di Storia Naturale, Genoa.

Comparative notes. Though its front tibiae are very similar to those of *M. micropunctatus, maureenae* is readily distinguished by its broader form, with slightly rounded sides, by its less transverse and differently shaped pronotum, at the sides of which the pubescence is somewhat conspicuous and accentuates the narrowly explanate margins, by the closer punctures of its upper surface, and by the absence of distinct reticulation between those of the elytra.

Meligethes latimanus sp. n.

Male.—Length, 2·1; breadth, 1·1 mm. Elongate, subparallel, moderately convex, black, somewhat dull, with conspicuous fine yellowish pubescence; legs dark reddish-black, front tibiae lighter. *Head* triangular, not broader than long, almost flat; clypeus with its front margin bordered, widely and somewhat deeply emarginate, with side angles sharp; surface with punctures equal in size to eye facets, separated by half a diameter, spaces between them smooth. Antennae pitchy reddish-brown, segments two and three lighter; club small, one and two-thirds times as long and twice as wide as first antennal segment. *Pronotum* transverse, one and a half times as wide as long (0·95 : 0·65 mm.), widest at basal third, its sides feebly rounded posteriorly, more strongly rounded and convergent towards front, narrowly bordered, not explanate. Anterior margin straight for width of neck, curving forward at each end to the blunt, slightly obtuse, front angle. Hind margin longer than front (0·9 : 0·6 mm.), evenly weakly convex; hind angles obtusely pointed. Surface with punctures equal in size to eye facets, separated by less than one diameter, spaces between them smooth. *Elytra* as long as wide (1·1 mm.), with sides gently rounded and distinctly bordered, broadest in middle and here wider than pronotum; hind angles widely rounded, each apex feebly convex, sutural angles obtusely pointed. Shoulders not very prominent, humeral striae indistinct. Surface with punctures one and a half times as large as those of pronotum, separated by half a diameter, spaces between them smooth. *Scutellum* with apex rounded, its surface finely reticulate and minutely punctate. *Pygidium* closely granulate. *Ventral surface* black. Prosternal process with apex subtruncate, one and two-thirds times as wide as antennal club; its deep punctures slightly larger than eye facets, separated by half to one diameter, absent from extreme apex, surface between them smooth. Mesosternum unpunctured, reticulate. Metasternum with deep punctures, slightly larger than those of prosternal process, separated by half a diameter, surface between them smooth; without secondary sexual characters. Abdomen with first segment punctured as metasternum, succeeding segments much more finely and closely punctate, their surface reticulate especially close to base. Caudal marginal line of hind coxal cavity follows closely the posterior edge of the latter, turning back close to its outer end. At extreme apex of last sternite is a minute notch, the edge of which is rolled and shining. *Legs* dark reddish-brown, front tibiae lighter. Front tibiae (fig. 13) strongly broadened, twice as wide as antennal club; outer edge with a prominent tooth at basal third, separated by a series of small, irregular teeth from a subapical group of two or three very large, subequal, bluntly pointed teeth, all teeth, especially those near the apex, as well as the broad subtarsal plate, tending to curve backwards. Intermediate and hind tibiae narrower, broadest in middle

and at apical third respectively ; outer edge of former furnished from basal fourth with quite short stout pegs, of latter from basal third with longer, finer, downwardly directed pegs ; inner edge of both feebly convex, not conspicuously bordered. Front tarsi with basal segments much dilated, one and three-quarter times as wide as antennal club, (intermediate tarsi missing), hind half as wide as antennal club ; last segment of front tarsi shorter than first four together, of hind equal to them ; claws simple. *Genitalia* (figs. 38 and 39) narrow, elongate. Tegmen gradually narrowed from middle, with short rounded lateral lobes and correspondingly concave apical excision ; median lobe subparallel, then abruptly contracted to the bluntly pointed apex.

Female.—Front tarsi fully as strongly dilated as in male, intermediate as wide as antennal club, hind two-thirds as wide ; last ventral segment simple. Ovipositor (fig. 69) unicolorous pale reddish-yellow ; apex with a corona, somewhat abruptly contracted, blunt, its styli short and at a distance from the apex slightly less than their length ; coxites with outer subdivisions large ; " central point " slightly nearer apex, with a distinct ventral spicule ; transverse suture almost straight ; paraprocts much broadened shortly beyond the base.

Type ♂, Abyssinia : Mt. Zuquála, ca. 9000 ft., 22.x.1926 (*Dr. H. Scott*) ; in British Museum (Nat. Hist.).

Paratype ♀, Abyssinia : Simien, Khabau (near Ghitche), ca. 11,000 ft., on *Senecio confertus* A. Rich., 18.xi.1952 (*Dr. H. Scott*) ; in British Museum (Nat. Hist.).

Variations. In the paratype (♀) the pronotum is broadest almost at the extreme base ; its tibiae and tarsi appear very slightly broader than in the type (♂).

Meligethes mauritii Grouvelle

M. mauritii Grouvelle, 1908, *Bull. Mus. Hist. nat., Paris*, **7** : 368.

Dissection of Grouvelle's type, a specimen from Ourbou, vii.1905 (*Maurice de Rothschild*), shows it to be a female. The following augmented description and notes are made from the long series detailed below.

Plesiotype ♂.—Length, 2·0 ; breadth, 1·05 mm. Elongate, subparallel, moderately convex, leaden black, somewhat dull, with somewhat long and conspicuous, yellowish pubescence ; legs reddish-black, front tibiae pitchy red, tarsi reddish. *Head* transverse, triangular, feebly convex ; clypeus with its front margin narrowly bordered, widely emarginate with side angles sharp ; surface with deep punctures slightly larger than eye facets, separated by half a diameter, spaces between them shallowly reticulate. Antennae almost black, with segments two and three reddish ; club oval, nearly twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, a little more than one and a half times as wide as long (0·95 : 0·6 mm.), widest at middle, sides gently rounded and more strongly convergent anteriorly, narrowly bordered, not explanate. Anterior margin shallowly concave, front angles blunt, obtuse. Hind margin longer than front (0·9 : 0·6 mm.), feebly convex and feebly sinuate on either side of scutellum ; hind angles obtusely pointed. Surface with punctures slightly larger than those of head, separated on disc by one diameter, less in front and at sides, spaces between them shallowly cross-reticulate. *Elytra* slightly longer than wide (1·15 : 1·05 mm.), with sides gently rounded and narrowly bordered, widest in middle ; hind angles widely rounded, each apex subtruncate, sutural angle obtusely pointed. Shoulders weakly raised, humeral striae very indistinct. Surface with elongate punctures, one and a half times as large as eye facets, separated by one and a half diameters, surface between them distinctly reticulate. *Scutellum* with apex rounded, its surface reticulate and minutely punctate. *Pygidium* with surface closely granular. *Ventral*

surface black. Prosternal process as wide as antennal club, with apex rounded, its deep punctures as large as eye facets, discrete towards apex, surface between them smooth and shining. Mesosternum with surface reticulate, impunctate. Metasternum feebly flattened, with punctures as large as eye facets, separated by one to two diameters, surface between them obsoletely reticulate. Abdomen with ventral segments much more finely and closely punctate, surface reticulate. Caudal marginal line of the hind coxal cavity follows closely the posterior edge of the latter, turning back shortly before reaching its outer end. Last sternite without secondary sexual characters. *Legs* reddish-black, front tibiae lighter. Front tibiae (fig. 14) not strongly dilated, not quite twice as wide as antennal club ; outer edge finely crenulate to just beyond middle, but on the right side a crenulation at the basal third is larger and more prominent than the others, towards the apex a group of about five rather short blunt teeth present, the apices of which give the tibia a more or less evenly rounded contour ; subtarsal plate not conspicuous. Intermediate and hind tibiae narrower, former widest in middle, the latter at the apical third ; their outer edges furnished from basal third, and middle respectively, with short, close, downwardly directed pegs. Inner edge of front tibiae straight, of intermediate and hind slightly convex at middle and basal third respectively ; not bordered. Front tarsi as wide, intermediate and hind slightly more than half as wide, as antennal club ; last segment almost as long as first four together ; claws simple. *Genitalia* (figs. 40 and 41) somewhat elongate. Tegmen gradually narrowed from middle, its somewhat long lateral lobes separated by a narrow U-shaped apical excision ; median lobe strongly contracted from apical fifth, bluntly pointed.

Female.—Front tarsi about as strongly dilated as in male, from which sex it is externally indistinguishable. Ovipositor (fig. 70) reddish-yellow with feeble piceous pigmentation at its somewhat acute apex ; corona not strongly developed ; the short styli at a distance from the apex equal to their length, not projecting beyond it ; coxites with inner subdivisions broad, outer long and narrow ; "central point" centrally placed with a somewhat long, very narrow, ventral spicule ; transverse suture straight.

Abyssinia : Jem-Jem Forest, 8,000–9,000 ft., 21–25.ix.1926, 1 ♀ ; and at nearly 9,000 ft., 24.ix.1926, 1 ♀ ; Doukam, 6,500–7,000 ft., 19.x.1926, " from flowers of a tree, *Cordia abyssinica* R. Br. ", 9 ♀ ; Mt. Zuquála, ca. 9,000 ft., 21–25.x.1926, 2 ♀ ; and on 22.x.1926, " beaten from trees near lake shore ", 2 ♀ ; " forest near highest point ", ca. 9,665 ft., 23.x.1926, 2 ♀ ; " in crater ", ca. 9,000 ft., 26.x.1926 (*J. Omer-Cooper*), 22 ♀ ; Mt. Chillálo, forest, ca. 9,000 ft., 12.xi.1926, 1 ♀ ; and on 14.xi.1926, 1 ♀ ; ca. 8,500 ft., 22.xi.1926, " from flower spikes of *Buddleia polystacha* Fres.", 3 ♂, 41 ♀ ; and on 24.xi.1926, 13 ♀ ; Mulu, above Muger Valley, ca. 8,000 ft., 18–23.xii.1926, 5 ♀ ; Addis Ababa, ca. 8,000 ft., 29.ix.1948, " under boulders sunk deep in damp soil ", 1 ♀ ; Wolamo Prov., Soddu, ca. 6,800 ft., 27.x.1948, " beaten from flowers of Compositae, etc.", 2 ♀ ; all in British Museum (Nat. Hist.). " Abyssinia " (*Raffray*), 3 ex.; in Muséum National d'Histoire Naturelle, Paris.

Biology. Active vii, ix, x, xi, at altitudes 6,500–9,665 ft. The type taken in July was mature, most of the specimens taken in later months exhibiting varying degrees of immaturity. Found beneath the soil in September.

Variations. Length 1·8–2·4 mm. The minutely more prominent tooth at the basal third of the outer edge of the front tibia is never conspicuous, it is often absent on one side, not infrequently on both ; the teeth of the apical group are sometimes more unequal, resulting in a less even contour. In some specimens the pronotal punctures are somewhat coarser.

Comparative notes. M. mauritii shows a considerable superficial similarity to *M. altercatio* sp. n., but may be distinguished by the following characters :

M. mauritii Grouvelle	*M. altercatio* sp. n.
Front tibiae : more widened towards the apex, and outer edge with teeth less evident in basal half.	less broadened towards apex, and teeth more evident in basal half.
Front tarsi : in both sexes as wide as antennal club.	in ♀ narrower than antennal club.
Upper surface : with punctures generally less coarse.	usually with coarse punctures.
Surface of elytra between punctures : distinctly reticulate.	generally scarcely reticulate.
Ovipositor : with apex more acute and projecting very slightly beyond the styli ; outer subdivision of coxites long and narrow ; transverse suture straight.	with apex rounded, not quite reaching as far as the styli ; outer subdivision of coxites short ; transverse suture in form of a flat V.

Meligethes altercatio sp. n.

Male.—Length, 1·85 ; breadth, 1·0 mm. Elongate, subparallel, moderately convex, black, somewhat shining, with long conspicuous yellowish pubescence ; legs slightly reddish-black. *Head* transverse, triangular, almost flat ; clypeus with its front margin distinctly bordered, widely, moderately deeply emarginate with its side angles sharp ; surface with punctures equal in size to eye facets, separated by half a diameter, spaces between them finely cross-reticulate. Antennae black, segments two and three slightly reddish ; club long oval, nearly twice as long, and two and a half times as wide, as first antennal segment. *Pronotum* transverse, not quite twice as wide as long (0·9 : 0·55 mm.), widest at middle, sides feebly rounded and convergent posteriorly, more strongly so anteriorly, narrowly bordered, not explanate. Anterior margin shallowly concave, front angles obtuse, rounded. Hind margin longer than front (0·85 : 0·65 mm.), feebly convex and feebly sinuate on either side of scutellum ; hind angles narrowly rounded, obtuse. Surface with deep punctures one and a half times as large as eye facets, separated by almost one diameter, spaces between them distinctly reticulate. *Elytra* as long as wide (1·0 mm.), with sides feebly rounded and narrowly bordered, widest in middle ; hind angles widely rounded, each apex weakly convex, sutural angle obtusely pointed. Shoulders weakly raised, without a recognisable humeral stria. Surface with elongate punctures, shallower at their hind end, twice as large as eye facets, separated by about one diameter, spaces between them almost smooth, becoming reticulate in apical third. *Scutellum* with rounded apex, minutely punctate and reticulate. *Pygidium* with surface finely granular. *Ventral surface* black. Prosternal process as wide as antennal club, with rounded apex ; its punctures equal in size to eye facets, unevenly spaced, surface between them smooth. Mesosternum unpunctured reticulate. Metasternum with punctures scarcely larger than eye facets, separated by one diameter, surface between them smooth ; male secondary sexual character consists of a triangular depression posteriorly, its apex reaching anterior third. Abdomen with first sternite having similar punctures to those of metasternum, second to fifth sternites much more finely and closely punctate. Caudal marginal line of hind coxal cavity follows closely the posterior edge of the latter, turning back close to its outer end. Last sternite with a small shining tubercle at its extreme apex. *Legs* unicolorous, almost black. Front tibiae feebly broadened, one and a third times as wide as antennal club ; outer edge with small downwardly directed teeth from basal fourth, at basal third is one feebly more prominent, and those of the subapical group are larger ; subtarsal plate inconspicuous. Intermediate and hind tibiae slightly narrower, subparallel, their outer edges furnished from basal third with a single row of short downwardly directed pegs, those of hind tibiae finer than those of intermediate. Inner edge of front and intermediate tibiae almost straight, of hind slightly convex at basal third ; not bordered. Front tarsi two-thirds, intermediate and

hind half as wide as antennal club; last segment almost as long as first four together; claws simple. *Genitalia* (figs. 42 and 43) elongate. Tegmen with shoulders just beyond the middle, gradually narrowed to apex, with narrow U-shaped apical excision, and narrow lateral lobes; median lobe bluntly pointed.

Female.—Length 2·2–2·4 mm. Tarsi as in male; metasternum and last ventral segment simple. Ovipositor (fig. 71) entirely reddish-yellow, with a moderately well-marked corona, its somewhat short styli projecting slightly beyond the bluntly pointed apex; outer subdivision of each coxite short; "central point" central, with a very short ventral spicule, transverse suture widely V-shaped; inner sclerotised edges of valvifers widened at base, paraprocts somewhat broad.

Type ♂, ABYSSINIA: Vallis Erer (*Kovács*); in Hungarian National Museum, Budapest.

Paratypes ♀, ABYSSINIA: near Addis Alam, ca. 8,000 ft., 18–19.ix.1926 (*J. Omer-Cooper*), 1 ♀; between Addis Alam and Jem-Jem, 7,000–8,000 ft., 20.ix.1926, 1 ♀; Jem-Jem Forest, ca. 8,000 ft., 23.ix.1926 (*J. Omer-Cooper*), 1 ♀; nearly 9,000 ft., 24.ix.1926, 7 ♀; edge of Jem-Jem Forest, ca. 9,000 ft., 4.x.1926, 4 ♀; Jem-Jem Forest, ca. 8,000 ft., 7.x.1926, 1 ♀; and in a damp shady place, 8,000–9,000 ft., 21–22.x.1926, 1 ♀; Mulu, above Muger Valley, ca. 8,000 ft., 18–23.xii.1926, 2 ♀; Gamo Prov., Wubara (between Chencha and Dita), ca. 8,500 ft., 3.xii.1948, 1 ♀; all in British Museum (Nat. Hist.).

Biology. Active ix, x, xii, at altitudes 7,000–9,000 ft.

Variations. As already noted, the females are all appreciably larger than the single male chosen as type. The teeth on the outer edge of their front tibiae (fig. 15) are slightly larger, especially in the apical group, than in the type, and as a rule the punctures of the upper surface are distinctly coarser, those of the pronotum twice as large, those of the elytra two and a half times as large as the eye facets. There is, of course, no proof that these females are conspecific with the type; nevertheless they agree in all other characters, and I believe them to be so.

Comparative notes. The close relationship of this species to *M. mauritii* Grouvelle has already been discussed. Probably fairly closely related to the following species, from which it is readily distinguished by the characters noted in the key.

Meligethes coronatus sp. n.

Male—Length, 2·6; breadth, 1·25 mm. Elongate, subparallel, moderately convex, black, somewhat shining, with short silvery pubescence; legs reddish-black, front tibiae slightly lighter. *Head* transverse, triangular, feebly convex; clypeus with its front margin strongly bordered, widely and moderately deeply emarginate, its side angles sharp; surface with punctures equal in size to eye facets, separated by quarter to half a diameter, the very narrow spaces between them smooth. Antennae dark red-brown, segments two and three redder; club oval, one and a half times as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, little more than one and a half times as wide as long (1·1 : 0·7 mm.), widest at basal third, its sides gently curved, slightly convergent posteriorly, more strongly so anteriorly, narrowly bordered, not explanate, Anterior margin straight for width of neck, curving forward at each end to the blunt obtuse front angle. Hind margin longer than front (1·05 : 0·65 mm.), feebly convex and scarcely sinuate on either side of scutellum; hind angles blunt, obtuse. Surface with punctures slightly larger

than eye facets, separated by slightly more than half a diameter, spaces between them shallowly cross-reticulate. *Elytra* as wide as long (1·25 mm.), with sides feebly curved and narrowly bordered, widest in middle ; hind angles widely rounded, each apex feebly convex, sutural angle obtusely pointed. Shoulders weakly raised, with a distinct humeral stria external to them. Surface with punctures twice as large as eye facets, separated by one diameter, spaces between them with distinct reticulation composed of small polygonal cells. *Scutellum* with apex rounded, its surface minutely punctate and reticulate. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process one and a quarter times as wide as antennal club, with rounded apex ; its punctures as large as eye facets, separated by half a diameter, surface between them smooth. Mesosternum impunctate, reticulate. Metasternum with punctures scarcely larger than eye facets, separated by about one diameter, surface between them smooth ; with a slight triangular flattening in posterior third as the secondary sexual character. Abdomen with first sternite having punctures equal in size to eye facets, separated by half a diameter, segments two to five much more finely punctate. Caudal marginal line of hind coxal cavity follows closely the posterior edge of the latter, turning backwards shortly before reaching its outer end. Last sternite with a well-marked shining tubercle at its extreme apex. *Legs* reddish-black, front tibiae slightly lighter. Front tibiae (fig. 16) moderately dilated, one and two-thirds times as wide as antennal club ; their outer edge with a more prominent tooth at basal third, followed by a series of small subequal teeth, and a subapical group of about four larger blunt teeth ; subtarsal plate inconspicuous. Intermediate and hind tibiae slightly narrower, broadest at apical third, their outer edge furnished from basal fourth with short pegs, stouter on the former. Inner edge of front and intermediate tibiae almost straight, of hind convex at basal third ; of intermediate and hind extremely narrowly bordered. Front tarsi three-quarters, the intermediate and hind two-thirds, as wide as antennal club ; last segment slightly shorter than first four together ; claws simple. *Genitalia* as figured (figs. 44 and 45), elongate, subparallel. Tegmen with short U-shaped apical excision and rather short rounded lateral lobes ; median lobe rounded at end with a small papillary process at its extreme apex.

Female.—Tarsi as in the male ; metasternum and last ventral segment simple. Ovipositor (fig. 72) entirely reddish-yellow ; with a well-marked corona between which and the bluntly pointed apex the edge of the organ is strongly sinuate ; with short styli at a distance from the apex slightly greater than their length ; coxites with inner subdivision broad, outer very narrow, scarcely visible ; " central point " slightly nearer apex, without a ventral spicule ; transverse suture widely V-shaped.

Type ♂, Abyssinia : near Addis Alam, ca. 8,000 ft., 18–19.ix.1926 (*J. Omer-Cooper*) ; in British Museum (Nat. Hist.).

Paratypes, Abyssinia : near Addis Alam, ca. 8,000 ft., 18–19.ix.1926 (*J. Omer-Cooper*), 3 ♀ ; between Jem-Jem and "Wouramboulchi", 8,000–9,000 ft., 30.ix.–1.x.1926 (*J. Omer-Cooper*), 1 ♀ ; all in British Museum (Nat. Hist.).

Biology. Active ix, x, at altitude 8,000–9,000 ft.

Variations. Length 2·3–2·6 mm. In the type specimen the teeth on the outer edge of the front tibiae appear worn, and the same is true of most of the paratypes ; they are subject to slight variation, but follow the general pattern described. The pubescence is readily rubbed. In the type the surface of the pronotum between the punctures is very nearly smooth, but in all the paratypes the cross-reticulation is quite evident.

Comparative notes. Readily distinguished from the last species (*altercatio*) by its greater size, its less transverse pronotum, and by the form of the teeth on the outer edge of its front tibiae.

Meligethes scotti Easton

M. scotti Easton, 1954, *Brit. Mus. Exp. S. W. Arabia* **24** : 343.

When describing *M. scotti* I suggested the possibility of its common identity with *subcaerulescens* Grouvelle, an opinion repeated in 1956. However, recent dissection of the type specimen of *subcaerulescens* proves this assumption to have been incorrect. *M. scotti* remains therefore a valid species.

The upper surface between the punctures of both pronotum and elytra is not always smooth, but in some examples shows faint microscopic reticulation.

Male : front tarsi feebly dilated (fig. 17) ; metasternum with a shallow median longitudinal impression widening posteriorly ; last sternite with a very small apical tubercle. Aedeagus (figs. 46 and 47) subparallel ; tegmen with short U-shaped apical excision ; lateral lobes rounded ; median lobe with apex explanate and shortly truncate. *Female :* metasternum and last sternite simple. Ovipositor (fig. 73) unicolorous reddish-yellow ; with a weak corona ; its short styli at a distance from the apex equal to one and a half times their length ; coxites with inner subdivisions large and broad ; " central point " centrally placed, with a fine short ventral spicule ; transverse suture straight.

Apparently closely related to *M. subcaerulescens* Grouvelle, but with more evident pubescence, and distinguishable by the characters noted in the key.

Abyssinia : Mt. Zuquála, ca. 9,000 ft., 22.x.1926, 2 ex.; in British Museum (Nat. Hist.). " Abyssinie " (*Raffray*), 2 ex. (paratypes) in Muséum National d'Histoire Naturelle, Paris. Also occurs in S. W. Arabia (*vide* Easton, 1954), Italian Somaliland : Juba valley (*vide* Easton, 1956), and East Africa : Arusha-Ju (*Katona*), xi.1905, 2 ex., and xii.1905, 2 ex., and between Moshi and Arusha, 6 ex., in Hungarian National Museum.

Active x, xi, xii, at altitudes 4,500–9,000 ft.

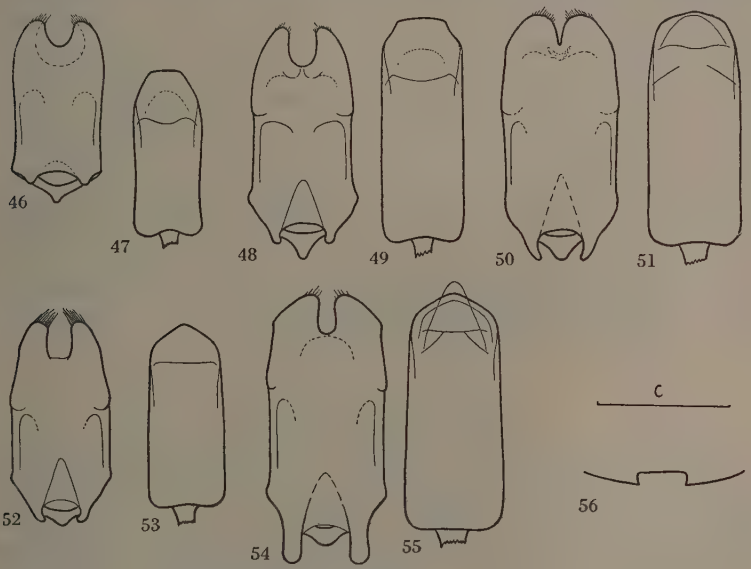
Meligethes subcaerulescens Grouvelle

M. subcaerulescens Grouvelle, 1908, *Bull. Mus. Hist. nat., Paris*, **7** : 365.
M. subpectinatus Grouvelle, 1908, *Ibid.* **7** : 370, **syn. nov.**

The type specimen of *M. subcaerulescens* proves to be a male, that of *subpectinatus* a female. Both were derived from the same locality. That they are one and the same species is proved by consideration of the very long series, the data of which are given below.

Length, 1·8–2·0 ; breadth, 0·85–1·05 mm. Elongate, slightly rounded at sides, not strongly convex ; black, with no trace of blue, shining, with distinct greyish pubescence. Legs entirely black ; front tibiae (fig. 18) not strongly broadened, their outer edge very variable, generally finely and evenly crenulate to apical third, then with a group of about five short teeth the blunt apices of which form an evenly rounded contour ; occasionally a minute more prominent tooth is evident at basal third (*cf.* type specimen, *vide* Easton, 1954 : 345), or the teeth near the apex may be sharper, or less regular. Front margin of clypeus widely emarginate, with side angles sharp. Pronotum moderately strongly transverse, one and two-thirds times as wide as long, with sides gently rounded, widest just behind middle ; base almost without sinuation on either side of scutellum ; its punctures equal in size to eye facets, separated by one and a half diameters, surface between them distinctly cross-reticulate. Elytra slightly longer than broad, feebly rounded at sides and

broadest just behind middle, here slightly broader than pronotum ; with shallow punctures as small as eye facets, separated by two diameters, surface between them shallowly reticulate. Prosternal process narrow, one and a quarter times as wide as antennal club, with rounded apex ; metasternum with deep punctures equal in size to eye facets, separated by about one and a half diameters, surface between them obscurely reticulate ; the caudal marginal-line of the hind coxal cavity adheres closely to the posterior edge of the latter, turning back shortly before reaching its outer end. *Male :* front tarsi scarcely perceptibly broadened, as wide as antennal club ; metasternum with a shallow triangular impression posteriorly ;



Figs. 46–56.—(46) Tegmen of *M. scotti* Easton. (47) Median lobe of *M. scotti*. (48) Tegmen of *M. subcaerulescens* Grouvelle. (49) Median lobe of *M. subcaerulescens*. (50) Tegmen of *M. fossilis* sp. n. (51) Median lobe of *M. fossilis* sp. n. (52) Tegmen of *M. subexilis* Grouvelle. (53) Median lobe of *M. subexilis*. (54) Tegmen of *M. imperator* sp. n. (55) Median lobe of *M. imperator* sp. n.

Fig. 56.—Apex of last sternite of male, *Meligethes lividus* sp. n., view in profile. Scale C = 0·25 mm.

last sternite with a small low shining tubercle at its apex. Aedeagus (figs. 48 and 49) moderately elongate ; tegmen with its somewhat long lateral lobes appearing to curve inwards to embrace the deep U-shaped apical excision ; median lobe with extreme apex subtruncate, before this shortly explanate. *Female :* extreme apical edge of the last sternite shining, giving in certain lights almost the appearance of a minute tubercle. Ovipositor (fig. 74) entirely reddish-yellow, with a well-marked corona ; the short styli at a distance from the somewhat blunt apex slightly in excess of their length ; inner subdivision of coxites much broadened, outer much reduced ; "central point" central, with a very short ventral spicule ; transverse suture widely V-shaped.

A somewhat variable species, but recognisable by its slightly rounded sides, its moderately transverse pronotum and somewhat conspicuous pubescence,

and particularly by its male secondary sexual characters, its aedeagus, and its characteristic ovipositor.

Ourbou, 1 ♂ (type), and 1 ♀ (type of *subpectinatus*), vii.1905 (*Maurice de Rothschild*); in Muséum National d'Histoire Naturelle, Paris.

Abyssinia: near Addis Alam, ca. 8,000 ft., 18–19.ix.1926 (*J. Omer-Cooper*), 1 ex.; between Addis Alam and Jem-Jem, 7,000–8,000 ft., 20.ix.1926, 1 ex.; and "swept in a grass field", 20.ix.1926 (*J. Omer-Cooper*), 3 ex.; Jem-Jem Forest, ca. 8,000 ft., 23.ix.1926 (*J. Omer-Cooper*), 3 ex.; between Jem-Jem and "Wouramboulchi", 8,000–9,000 ft., 8–11.x.1926 (*J. Omer-Cooper*), 2 ex.; Mt. Chillálo, forest, ca. 9,000 ft., 4.xi.1926, 1 ex., 12.xi.1926, 9 ex., and 14.ix.1926, 17 ex.; ca. 8,500 ft., 22.xi.1926, "from flower spike of *Buddleia polystachya* Fres.", 29 ex.; Mt. Chillálo, Digalla, ca. 9,500 ft., 26.xi.1926, 25 ex., and 27.xi.1926, 2 ex.; Mulu, above Muger Valley, ca. 8,000 ft., 18–23.xii.1926, 7 ex.; Wolamo Prov., Soddu, ca. 6,800 ft., 27.x.1948, "beaten from flowers of Compositae, etc.", 2 ex.; Wolamo Prov., spur of Mt. Damota, over 8,000 ft., 28.x.1948, 1 ex.; Simien, near Mindigabsa, ca. 10,000 ft., 29.xii.1952, 1 ♂, 1 ♀, also 2 ♀ "shaken from inflorescences of *Lobelia rhynchopetalum*"; all in British Museum (Nat. Hist.). Lac Dembel, i.1912 (*Kovács*), 1 ♂, 1 ♀; Chercher (Tschertscher), 1911 (*Kovács*), 1 ♀; Vallis Erer (*Kovács*), 7 ♂, 5 ♀; in Hungarian National Museum.

Active i, vii, ix, x, xi, xii, at altitudes 6,800–10,000 ft.

Meligethes fossilis sp. n.

Male.—Length, 2·5; breadth, 1·3 mm. Elongate, subparallel, moderately convex, black, shining, with close long conspicuous yellowish-gray pubescence; legs entirely black. *Head* triangular, not strongly transverse, frons feebly convex, with a shallow transverse depression at base of clypeus; clypeus with its front margin bordered, widely, moderately deeply, emarginate, its side angles sharp; surface with punctures slightly smaller than eye facets, separated by almost one diameter, spaces between them smooth. Antennae entirely black; club elongate oval, twice as long and two and a quarter times as wide as first antennal segment. *Pronotum* transverse, one and a half times as wide as long (1·15 : 0·8 mm.), widest at middle, its sides almost straight and slightly convergent posteriorly, rounded and more strongly convergent anteriorly, narrowly bordered, scarcely explanate. Anterior margin shallowly concave, front angles obtuse, rounded. Hind margin longer than front (1·1 : 0·75 mm.), almost straight; hind angles blunt obtuse. Surface with shallow punctures equal in size to eye facets, separated by one and a half diameters, spaces between them smooth, except at extreme base on either side of scutellum where there is a trace of reticulation. *Elytra* slightly longer than wide (1·45 : 1·3 mm.), with sides feebly rounded and narrowly bordered, widest in middle and here distinctly wider than pronotum; hind angles widely rounded, each apex separately convex, sutural angle obtusely pointed. Shoulders low, humeral striae indistinct. Surface with punctures as large as eye facets, separated by one and a half diameters, exhibiting a faint trace of transrugosity, spaces between them smooth. *Scutellum* with apex rounded, its surface minutely punctate and reticulate. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process one and a quarter times as wide as antennal club, with apex rounded; its punctures slightly smaller than eye facets, separated by one diameter, surface between them smooth. Mesosternum impunctate, reticulate. Metasternum with punctures as small as eye facets, separated by one and a half diameters, surface between them smooth; without any secondary sexual character. Abdomen with first sternite having punctures only slightly finer and closer than those of metasternum, succeeding segments much more finely punctate. Caudal marginal line

of hind coxal cavity follows closely the posterior edge of the latter, turning back shortly before reaching its outer end. Last sternite with a shining crescentic ridge, concave backwards, at its apex, the distance between its ends two-thirds the width of antennal club. *Legs* unicolorous black. Front tibiae (fig. 19) almost subparallel, close to apex about one and three-quarters times as wide as antennal club; their outer edge with well-marked irregular sharp teeth almost from base, the penultimate one or two distinctly larger; subtarsal plate inconspicuous. Intermediate and hind tibiae similarly gradually broadened to apical fourth, their outer edges furnished from basal fourth with close short downwardly directed pegs, finer on hind tibiae. Inner edge of front and intermediate tibiae weakly convex, hind more strongly so, at basal third; not bordered. Front tarsi three-quarters, intermediate and hind two-thirds, as wide as antennal club; last segment as long as first four together; claws simple. *Genitalia* as figured (figs. 50 and 51), subparallel. Tegmen with wide rounded lateral lobes, separated by the narrow cleft-like apical excision; median lobe with apex rounded.

Female.—Not known.

Type ♂, ABYSSINIA: Gamo Prov., top of Mt. Tola, 11,000–12,000 ft., 15.xii.1948, "from peat soil beneath *Erica* bushes" (*Dr. H. Scott*); in British Museum (Nat. Hist.).

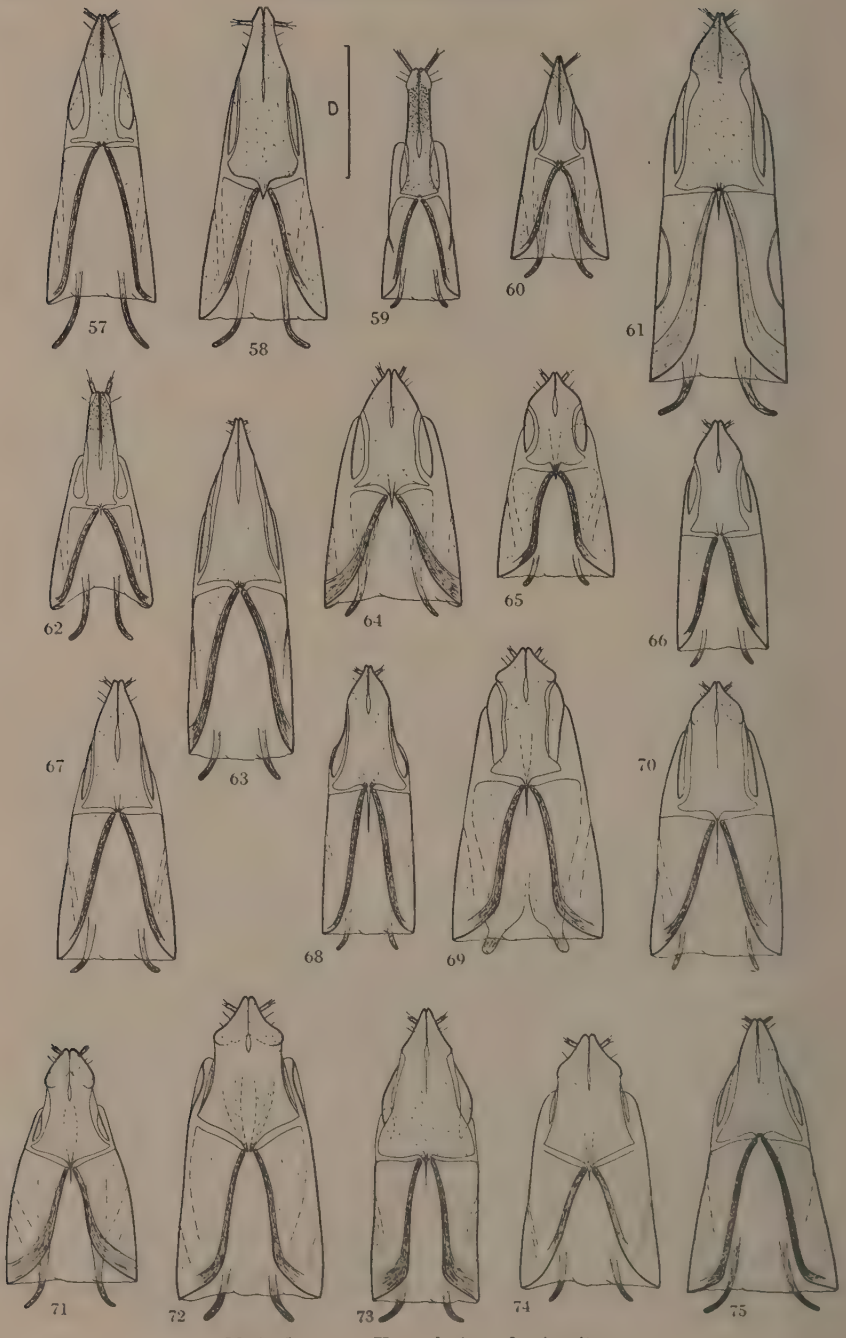
Comparative note. Readily distinguished by its combination of large size, conspicuous pubescence, smooth upper surface, and by its black tibiae of characteristic form. Apparently fairly closely related to the two following species.

Meligethes subexilis Grouvelle

M. subexilis Grouvelle, 1908, *Bull. Mus. Hist. nat., Paris*, **7**: 367.
M. insolens Grouvelle, 1908, *Ibid.*, **7**: 369, **syn. nov.**

The type and co-type of *subexilis* in the Paris Museum prove to be males. The type of *insolens*, a female, agrees with them exactly, save in the sexual characters, and I am entirely satisfied as to their common identity. All three were taken at Uomber, 1905 (*Rothschild*).

Length, 2·4–2·5; breadth, 1·1–1·2 mm.; elongate, subparallel, not strongly convex; black, somewhat shining, with close brownish-yellow, recumbent pubescence. Legs black, tibiae long and narrow; outer edge of front tibiae (fig. 20) with a larger more prominent tooth at basal third, separated by about four uneven smaller teeth from a group of larger teeth close to apex; in this group the first and penultimate are larger and more prominent than the one or two between them; outer edge of intermediate tibiae with short pegs separated by a distance less than their length; inner edge of intermediate and hind without a conspicuous border. Front margin of clypeus widely emarginate with side angles sharp. Pronotum one and two third times as wide as long; base scarcely sinuate on either side of scutellum; its punctures slightly larger than eye facets separated by one to one and a half diameters (or two on disc), surface between them shallowly, mostly obliquely, cross-reticulate. Elytra slightly longer than wide; their punctures equal in size to those of pronotum, separated by one to one and a half diameters, surface between them cross-reticulate. Prosternal process rounded at apex, one and a half times as wide as antennal club; caudal marginal line of hind coxal cavity runs close beside the hind edge of the latter, turning back shortly before reaching its outer end. *Male:* slightly narrower and less rounded at sides than female, pronotum slightly more rounded at sides, and slightly broader in proportion to elytra; front tarsi three quarters as wide as antennal club; metasternum with a shining median linear impression from anterior third to posterior fourth; apex of



Meligethes spp. Ventral view of ovipositors.

last sternite with a minute, somewhat shining tubercle, slightly transverse and feebly concave posteriorly. Aedeagus as figured (figs. 52 and 53); tegmen narrowed from shoulders, with a U-shaped apical excision, its elongate lateral lobes rounded at apex; median lobe parallel-sided with apex obtusely pointed. *Female :* front tarsi a little more than half as wide as antennal club. Ovipositor (fig. 75) reddish-yellow, with apex very slightly piceous; its short styli very close to the somewhat sharp apex; outer subdivisions of coxites long and narrow, inner broad; " central point " slightly nearer apex, without a ventral spicule; transverse suture feebly inversely V-shaped.

M. subexilis is well characterised by its elongate form; its evenly closely punctate upper surface, with close recumbent yellowish pubescence and in particular by its long narrow tibiae.

The pronotum is less strongly transverse, and total length greater, than stated by Grouvelle in his original description.

Abyssinia : Uomber, 2 ♂ (type and co-type), viii.1905, 1 ♀ (type of *insolens*), 1905 (*Maurice de Rothschild*); in Muséum National d'Histoire Naturelle, Paris. Mt. Zuquála, forest near highest point, ca. 9,665 ft., 1 ♀, 23.x.1926 (*Dr. H. Scott*); in British Museum (Nat. Hist.). Chercher (Tschertscher), 1 ♀, and Vallis Erer, 1 ♀ (*Kovács*); in Hungarian National Museum.

Occurring viii, x, at altitudes up to nearly 10,000 ft.

Meligethes imperator sp. n.

Male.—Length, 2·5; breadth, 1·35 mm. Elongate, subparallel, not strongly convex, black, somewhat shining, with moderately conspicuous, whitish pubescence; legs black, front tibiae reddish. *Head* transverse, triangular, feebly convex; clypeus with its front margin distinctly bordered, widely, moderately deeply emarginate, its side angles sharp; surface with deep punctures equal in size to eye facets, separated by half to one diameter, spaces between them closely reticulate. Antennae black with segments two to four reddish; club large, elongate oval, twice as long and two and a half times as wide as first antennal segment. *Pronotum* transverse, one and two-thirds times as wide as long (1·25 : 0·75 mm.), widest at basal third, sides moderately strongly rounded and more convergent anteriorly than posteriorly, distinctly bordered, scarcely explanate. Anterior margin straight for width of neck, curving forwards at each end to the blunt obtuse front angles. Hind margin longer than front (1·2 : 0·75 mm.), feebly convex, and scarcely sinuate on either side of scutellum; hind angles blunt, obtuse. Surface with deep punctures equal in size to eye facets, separated by one and a half to two diameters, spaces between them strongly, mostly obliquely, reticulate. *Elytra* slightly longer than broad (1·45 : 1·35 mm.), with sides weakly rounded, distinctly bordered, widest in middle; hind angles widely rounded, each apex weakly convex, sutural angle obtusely pointed. Shoulders weakly raised, humeral striae inconspicuous. Surface with deep, slightly elongate punctures, scarcely larger than those of pronotum, separated by one and a half diameters, spaces between them distinctly reticu-

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Figs. 57–75.—Ventral view of ovipositors. (57) *Meligethes longiceps* sp. n. (58) *M. simulans* sp. n. (59) *M. spissus* Grouvelle. (60) *M. culminis* sp. n. (61) *M. aethiopicus* Grouvelle. (62) *M. abstractus* Grouvelle. (63) *M. limifer* sp. n. (64) *M. adversus* sp. n. (65) *M. lividus* sp. n. (66) *M. livens* Grouvelle. (67) *M. micropunctatus* sp. n. (68) *M. maureenae* sp. n. (69) *M. latimanus* sp. n. (70) *M. mauritii* Grouvelle. (71) *M. altercatio* sp. n. (72) *M. coronatus* sp. n. (73) *M. scotti* Easton. (74) *M. subcaerulescens* Grouvelle. (75) *M. subexilis* Grouvelle. Scale D = 0·25 mm.

late, with a tendency to form minute polygonal cells. *Scutellum* with apex rounded; its surface minutely punctate and reticulate. *Pygidium* with surface closely granular. *Ventral surface* black. Prosternal process with apex subtruncate, one and a quarter times as wide as antennal club, with punctures almost equal in size to eye facets, irregularly spaced and almost absent close to apex, surface between them smooth. Mesosternum impunctate, closely reticulate. Metasternum with punctures as large as eye facets separated by one to one and a half diameters, surface between them smooth; male secondary sexual characters consist of a triangular flattening in the posterior two-thirds, with a median longitudinal impressed line. Abdomen with first sternite having punctures slightly smaller than eye facets, separated by two diameters, surface between them aciculate, succeeding segments very much more finely and closely punctate. Caudal marginal line of hind coxal cavity follows closely the posterior edge of the latter, turning back shortly before reaching its outer end. Near the apex of the last sternite is a well-marked, raised, shining, crescentic ridge, concave backwards, its length equal to two-thirds the width of the antennal club. *Legs* black, front tibiae fuscous reddish. Front tibiae (fig. 21) not strongly broadened, one and a half times as wide as antennal club; their outer edge, except for a very small prominent tooth at basal third, crenulate to beyond middle, then with a subapical group of about five small sharp teeth, the first and penultimate tending to be more prominent than those between; subtarsal plate moderately broad. Intermediate and hind tibiae as wide as front, broadest at apical third and fourth respectively, their outer edges furnished from basal third and middle with close-set, short stout pegs. Inner edge of front and intermediate tibiae almost straight, of hind pair convex at basal third; not bordered. Front tarsi moderately dilated, four-fifths as wide as antennal club, intermediate two-thirds, hind half as wide; last segment of all tarsi as long as first four together; claws simple. *Genitalia* (figs. 54 and 55) elongate, subparallel. Tegmen with broad lateral lobes obliquely subtruncate at apex, apical excision deep, narrow, U-shaped; median lobe bluntly pointed.

Female.—Not known.

Type ♂, Abyssinia: Gamo Prov., Mt. Tola (Gughé highlands), over 10,000 ft., 5.xii.1948, "beaten from flowering herbs and bushes, near track across eastern escarpment" (*Dr. H. Scott*); in British Museum (Nat. Hist.).

Paratype ♂, Abyssinia: Simien, nr. Mindigabsa, ca. 10,000 ft., 29.xii.1952, an immature specimen "shaken from inflorescences of *Lobelia rhynchopetalum* Hemsl." (*Dr. H. Scott*); in British Museum (Nat. Hist.).

Variation. The paratype measures 2·3 mm.; its pronotum is very slightly narrower and less rounded at the sides than in the type.

Comparative notes. Very similar, and undoubtedly closely related to *subexilis* Grouvelle, *imperator* shows similar secondary sexual characters. In addition to the characters noted in the key, its different aedeagus easily distinguishes it.

IV. Summary

This paper deals with the *Meligethes* of Abyssinia, and principally with the large collection made by Dr. Hugh Scott and Mr. J. Omer-Cooper in this region. A key is given, based as far as possible on characters of taxonomic importance, following which each of the twenty-two species is described in detail. Of this total, thirteen are new to science, and authentic examples have been examined in all but one of the remainder. Figures are given not only of the genitalia in both sexes, but also of front tibiae which illustrate the principal arrangements of the teeth on their outer edge.

V. Acknowledgments

In completing this paper I am very conscious of my debt to those whose courage and untiring efforts in difficult country have provided the material, and in particular to Dr. Hugh Scott who, with the co-operation of the entomological staff of the British Museum (Natural History), put all his specimens of this genus at my disposal. I am grateful too to Dr. Z. Kaszab of the Hungarian National Museum, Budapest, for loaned specimens, and particularly to colleagues of the Muséum National d'Histoire Naturelle, Paris, and of the Naturhistoriska Riksmuseum, Stockholm, for facilities enabling me to examine Grouvelle's types. Nor do I forget the kindness of the Director of the Royal Botanic Gardens, Kew, who has, as always, helped with botanical nomenclature.

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